FCS-0071

2-Megapixel Fish-Eye PoE Network Camera

User's Manual

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General Public License

This product incorporates open source code into the software and therefore falls under the guidelines governed by the General Public License (GPL) agreement.

Adhering to the GPL requirements, the open source code and open source license for the source code are available for free download at http://global.level1.com.

If you would like a copy of the GPL or other open source code in this software on a physical CD medium, LevelOne (Digital Data Communications) offers to mail this CD to you upon request, for a price of US$9.99 plus the cost of shipping.

Default Settings

IP Address	DHCP
Username	root
Password	Null (without password)

Notices

This user manual is intended for administrators and users of the FCS-0071 Network Camera, including instructions for using and managing the camera on your network. The use of surveillance devices may be prohibited by law in your country. It is the user's responsibility to ensure that the operation of such devices is legal before installing this unit for its intended use.

Before the Network Camera is installed, all the safety and operating instructions should be carefully read and followed to avoid damage due to faulty assembly and installation. This also ensures the product is used properly as intended.

Heed all warnings

- **Do not drop or strike this equipment**
  Sensitive electronics inside the camera are vulnerable to excessive strike.
- **Do not install the equipment near any flames or heat sources**
  Excessive heat could damage this equipment.
- **Do not cover cloth or to install this equipment in poorly ventilated places.**
  Overheating could damage this equipment.
- **Do not expose this equipment to rain or moisture. Do not touch the power connection with wet hands**
  Risk of short circuit, electric shock or fire
- **Do not damage the power cord or leave it under pressure**
  Risk of fire or shock circuit
- **To reduce the risk of electric shock, do not remove the Cover (or Back).**
  No user-serviceable parts inside. Misusage, improper, and negligence could damage this equipment. Need to refer servicing to qualified service personnel.
- **Do not continue to operate if there appears to be fault.**
  If the unit ceases to function, contact qualified service personnel for help.
- **All work related to the installation of this product should be made by qualified service personnel or system installers.**

Introduction

FCS-0071 is a 2 Mega Pixel Fish-Eye Panorama Network Camera with H.264-AVC performance and other rich functions. FCS-0071 is equipped with a fish-eye lens for 360° panoramic wide angle view without blind spots making it the perfect solution for viewing wide areas with like hallways, stores, and offices without the need to install multiple cameras.

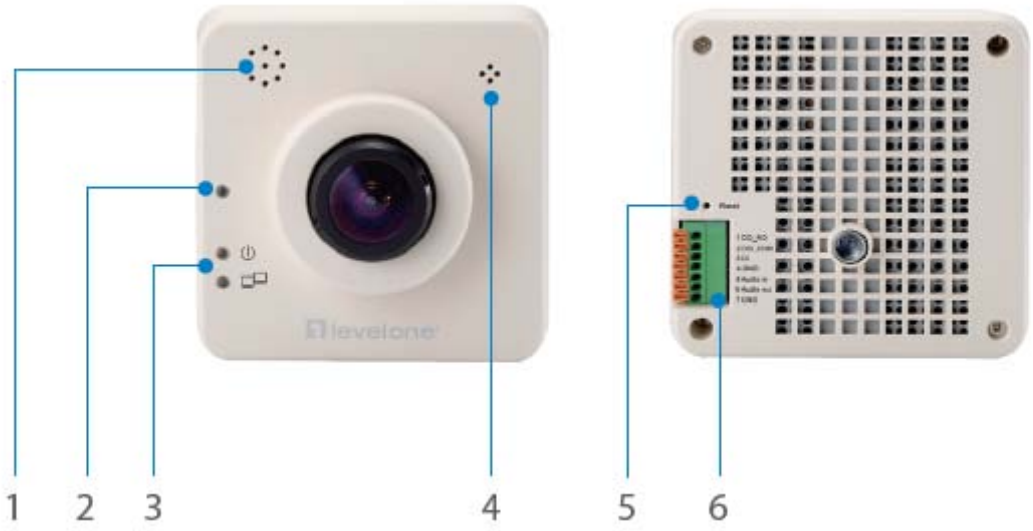
H.264-AVC video compression lowers bandwidth and storage requirements without compromising image quality; Motion JPEG is supported for increased flexibility, as well as multiple independent video streaming. The hardware based panorama video processing ability can provide user multiple video modes including source image, double broad view, triple mode view and quad view.

The e-PTZ function, including preset point without moving parts, can replace part of traditional PTZ camera and thus save lost of traditional mechanical Pan/Tilt maintain cost.

The camera features PoE (Power-over-Ethernet) capability, providing easy installation through a single Ethernet cable, eliminating the need for additional power cables and outlets. Other functions include two-way audio and micro SD card support for local storage application.

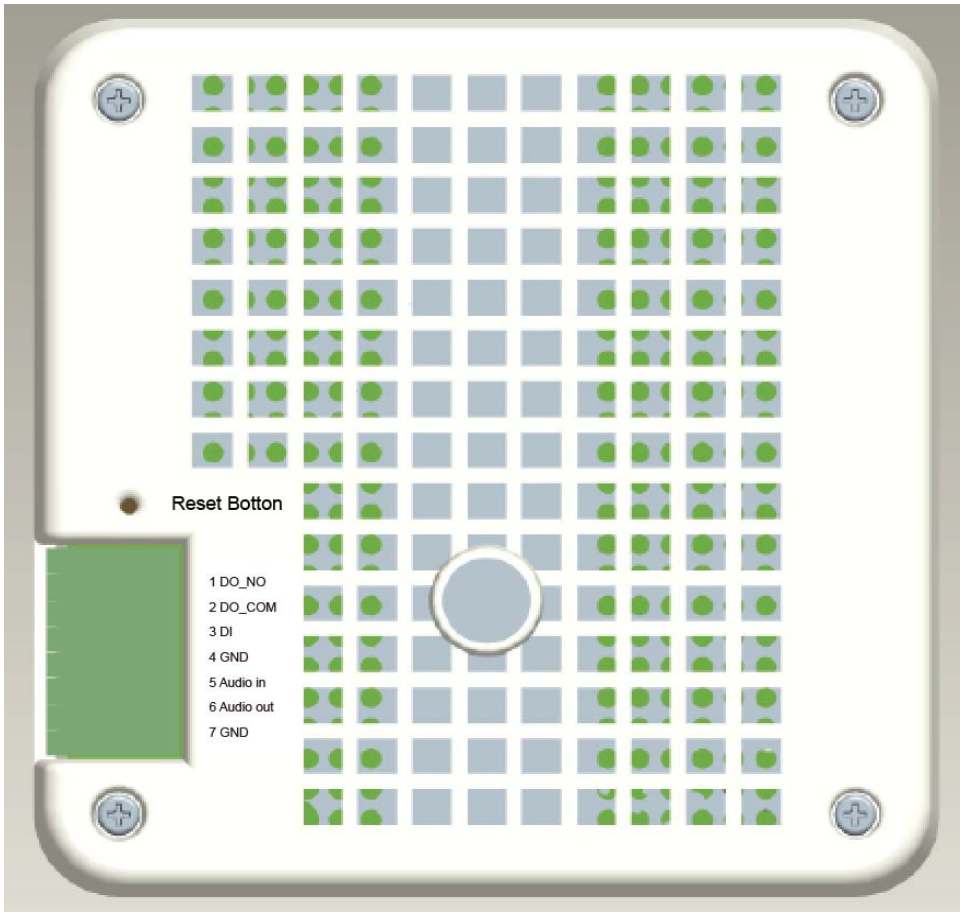
Installation

FCS-0071 – Physical Overview



1. Speaker
2. Light Sensor
3. LEDs
4. Built-in Microphone
5. Reset Button
6. GPIO
7. Micro SD Slot
8. Power Connector
9. Ethernet

Terminal block for I/O connectors



Pin	Function	Description
1	DO_NO	Digital output implementation; Pin7 to COM (Pin6) is a Photo-coupled relay on Normal Open status. External device can directly connect to the terminals. However the current that will go through the 2 nodes must not exceed 130mA. An external "Relay" can also be connected to the terminals as an implementation. In this case, current (or/and voltage) limitation is specified by the external Relay.
2	DO_COM	
3	DI	Connect to GND to activate, or leave floating (or unconnected) to deactivate.
4	GND	
5	Audio In	2 way Audio connectors , and connect to GND to activate
6	Audio Out	
7	GND	

1. Hardware Connection

1. Prepare a PC with Ethernet link to the network
2. Connect LAN port (RJ45) of the camera to a network switch/hub
3. Connect power jack (ignore if using PoE)
4. Ensure the power adaptor specification matches the power system (110V or 220V) and connect the adaptor to the outlet
5. Check LED status (Power/Network)

2. Software Installation

The following software is necessary for the proper display and use of the FCS-0071 from the Web site. The software will be taken from the Software Package CD.

IP Installer

The IP Installer is used to locate and configure network cameras and video servers on the LAN. This utility is useful for conveniently configuring the network settings of the device, or for finding a device once the network settings have been modified.
To install the IP Installer, from the Software CD, select IP installer, then follow the on instructions to complete the installation.

XVID Codec

An H.264 codec is applied for displaying the video stream and playing the recoded AVI files. If the video stream can't be displayed or the recorded AVI files can't be play on PC, install this software from the Software CD.

VLC

Though not necessary, this can be used for viewing the streaming without a Web browser.
The camera's manual recording format is MP4, you also need to use like VLC player to view.

Here is the reference link : http://www.videolan.org

3. Network Configuration

IP Installer is a utility that provides an easier, more efficient way to configure the IP address and network settings of the devices. It even provides a convenient way to set the network settings for multiple devices simultaneously using the batch setting function. Moreover, IP Installer can save the network settings for all devices as a backup and restore them when necessary.

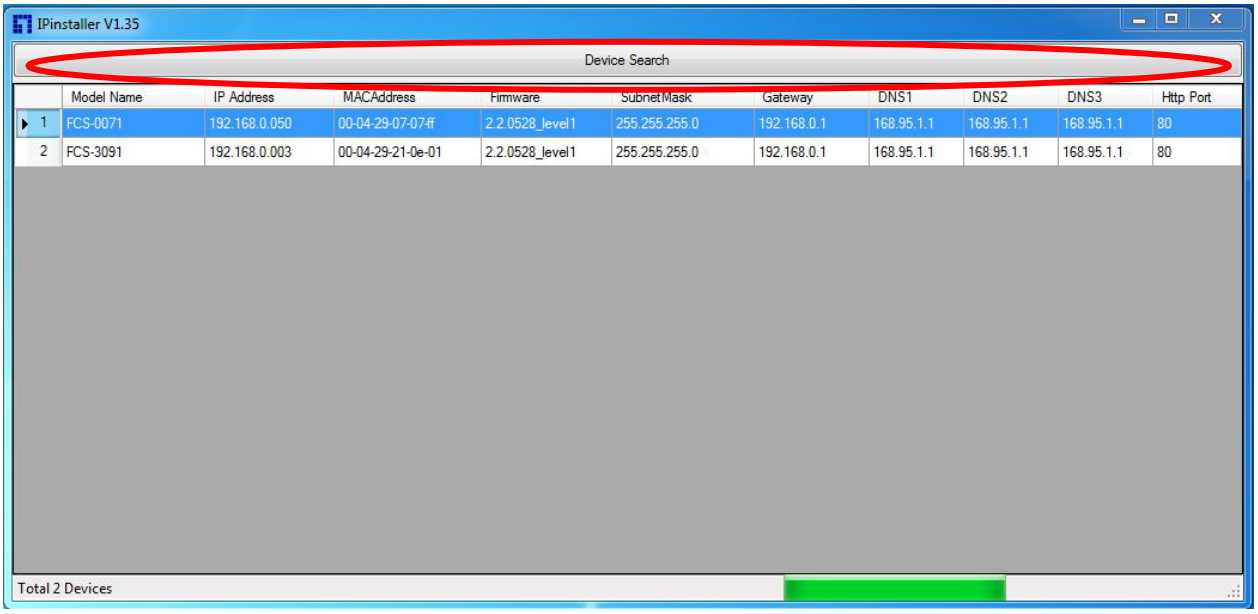
Preparation before IP Assignment

1. Always consult your network administrator before assigning an IP address to your server in order to avoid using a previously assigned IP address.
2. Ensure the camera is powered on and correctly connected to the network.
3. MAC Address: Each device has a unique Ethernet address (MAC address) shown on the label of the device as the serial number (S/N) with 12 digits (e.g. 00116B-XXXXXX).
4. Although the IP Installer is able to find and configure any FCS-0071 on the LAN except those that are behind a router, it is a good idea to set the host PC to the same subnet. In order to connect to the Web-based user interface of the camera, the host PC must be in the same subnet. For more information about subnets, please consult your network administrator.

Using IP Installer to Assign an IP Address to FCS-0071

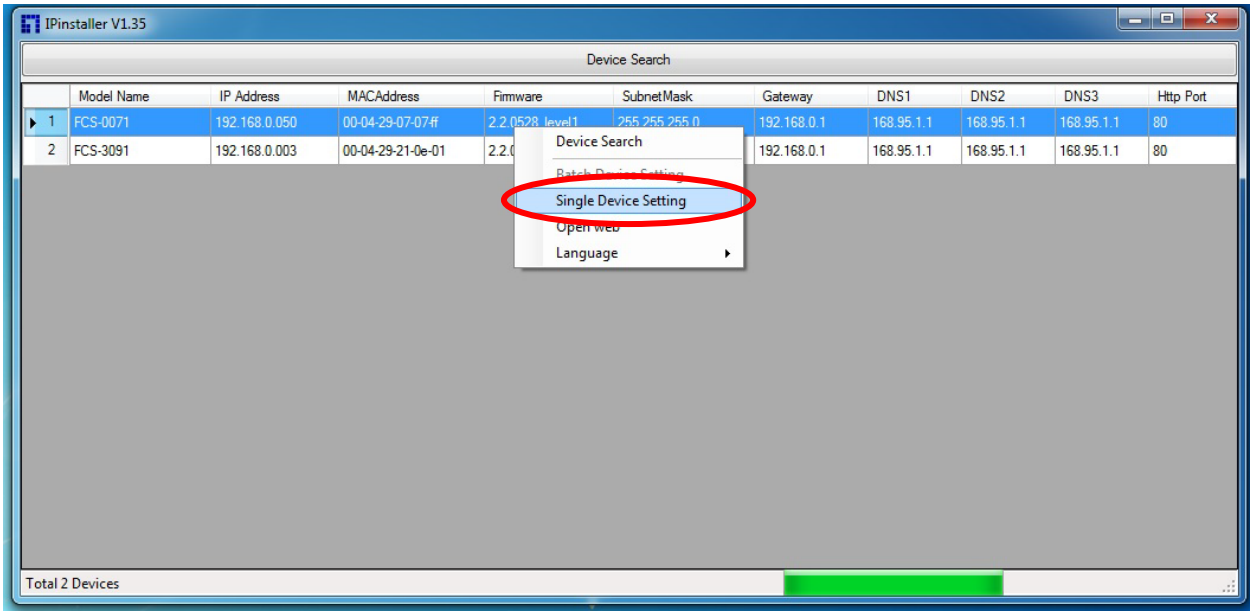
1. Once IP Installer has been successfully installed on the PC, double click to run the software.

2. Click the **[Device Search]** to search the device in the LAN.

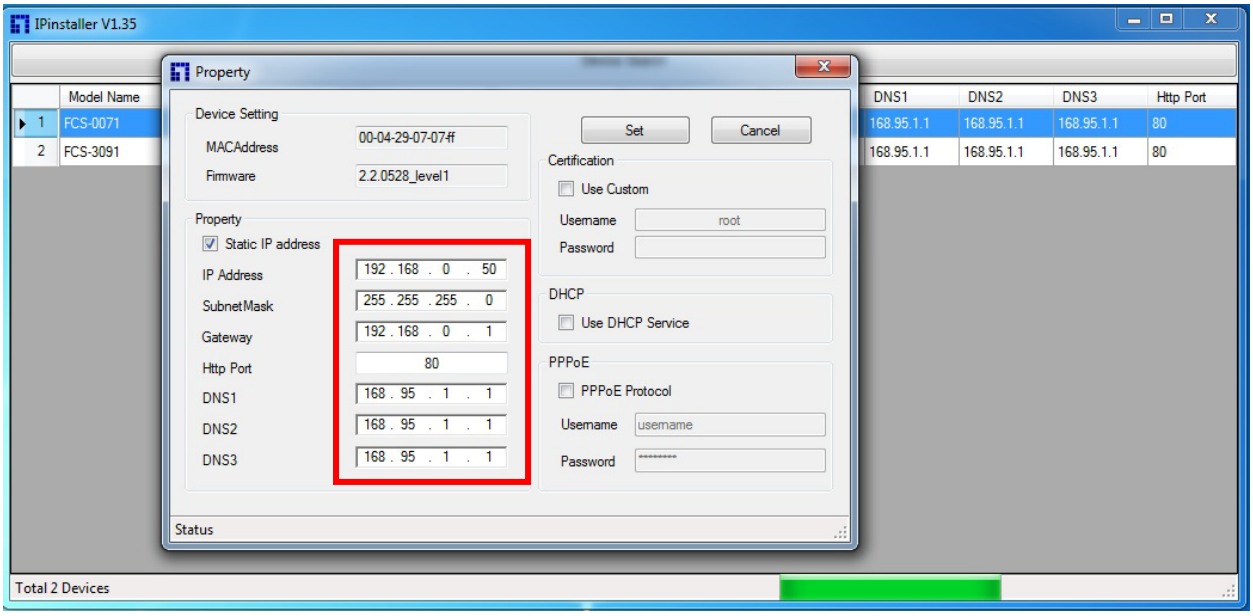


3. From the list, select the device with the MAC Address that corresponds to the FCS-0071 that is to be configured. The MAC Address is identical to the unit's S/N (Serial Number).

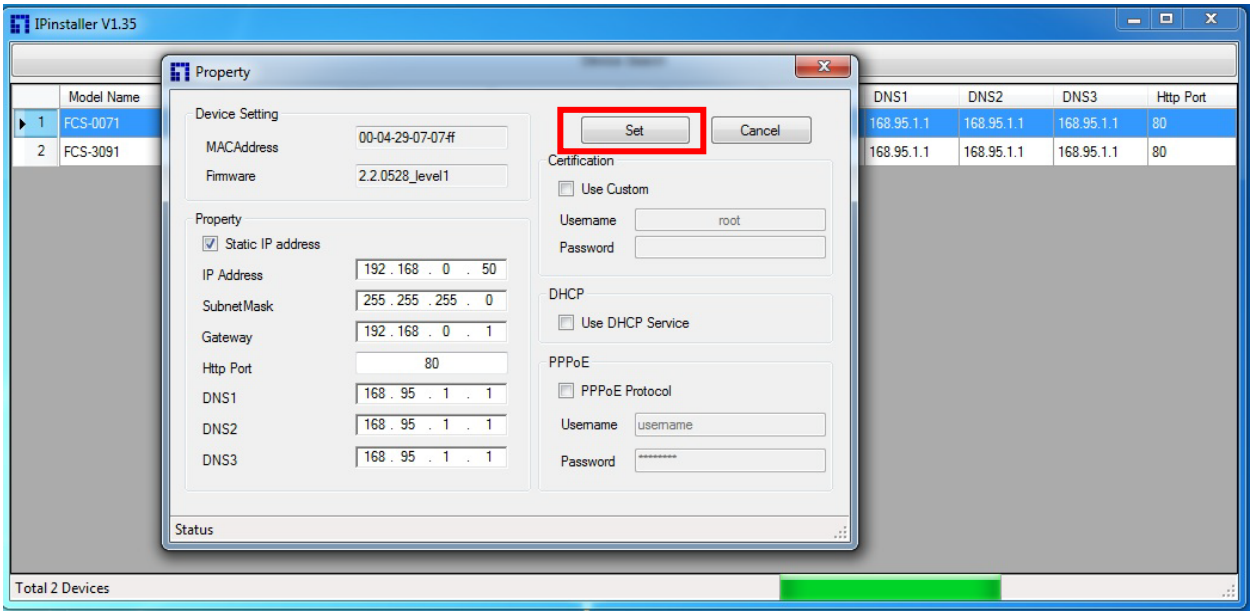
4. Double click the select item to open the Property Page or right click the item to select the **[Single Device Setting]**.



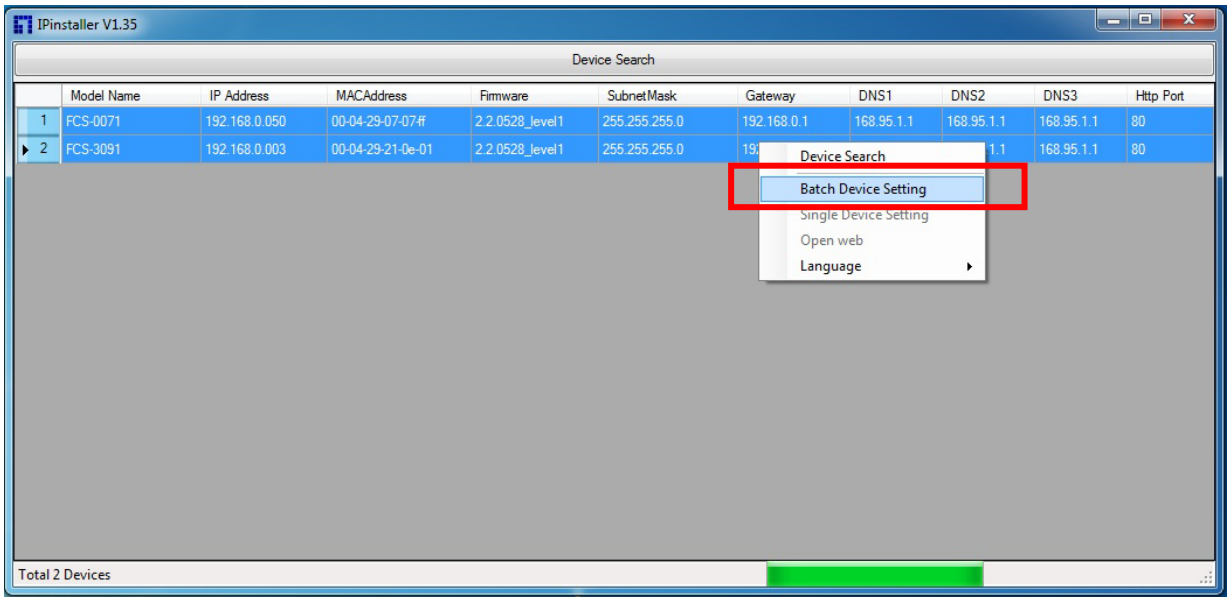
5. Modify the network settings of the camera.

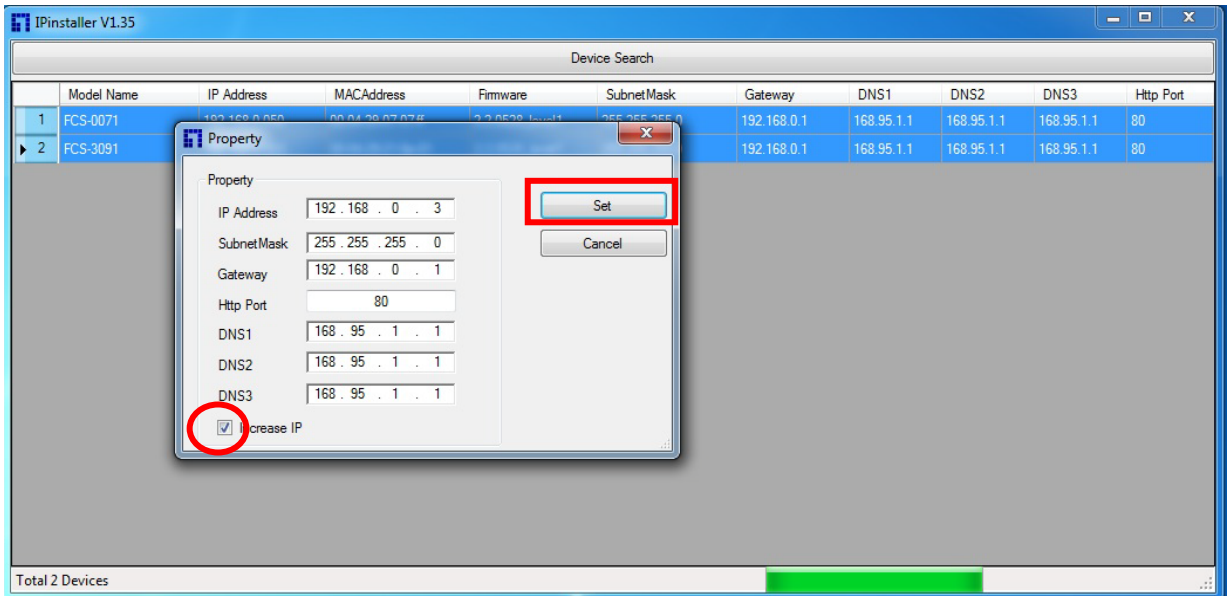


6. After filling in the properties, click **[Set]** button to complete the configuration settings.

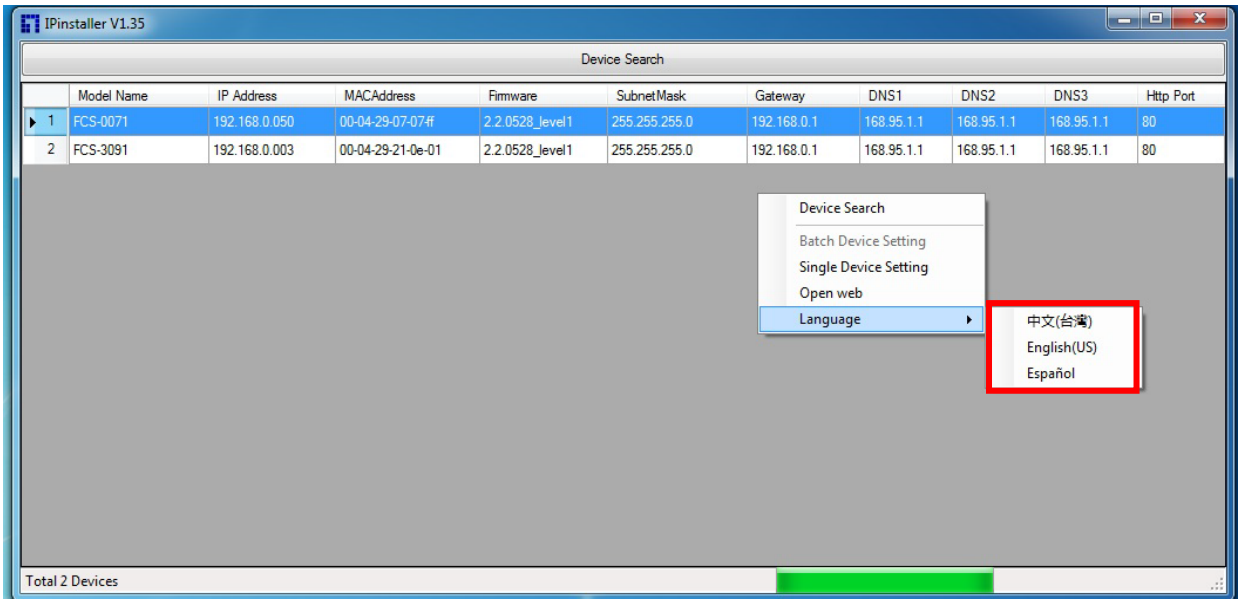


7. Click the **[Batch Device Setting]** to set several devices.



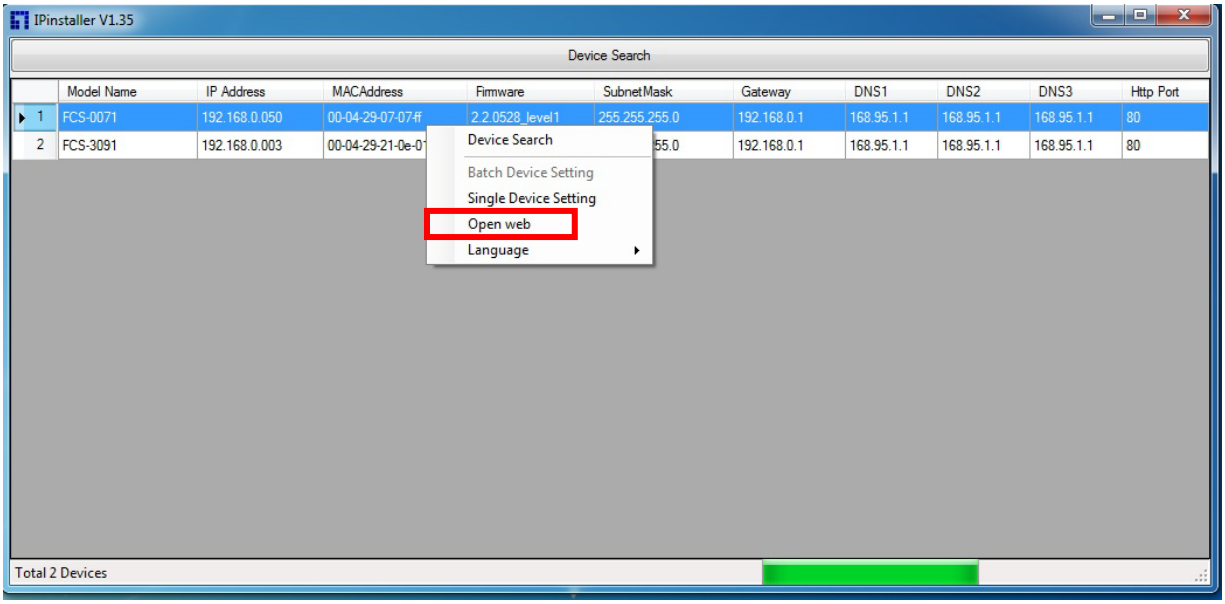


8. Language support for Chinese, English and Spanish.

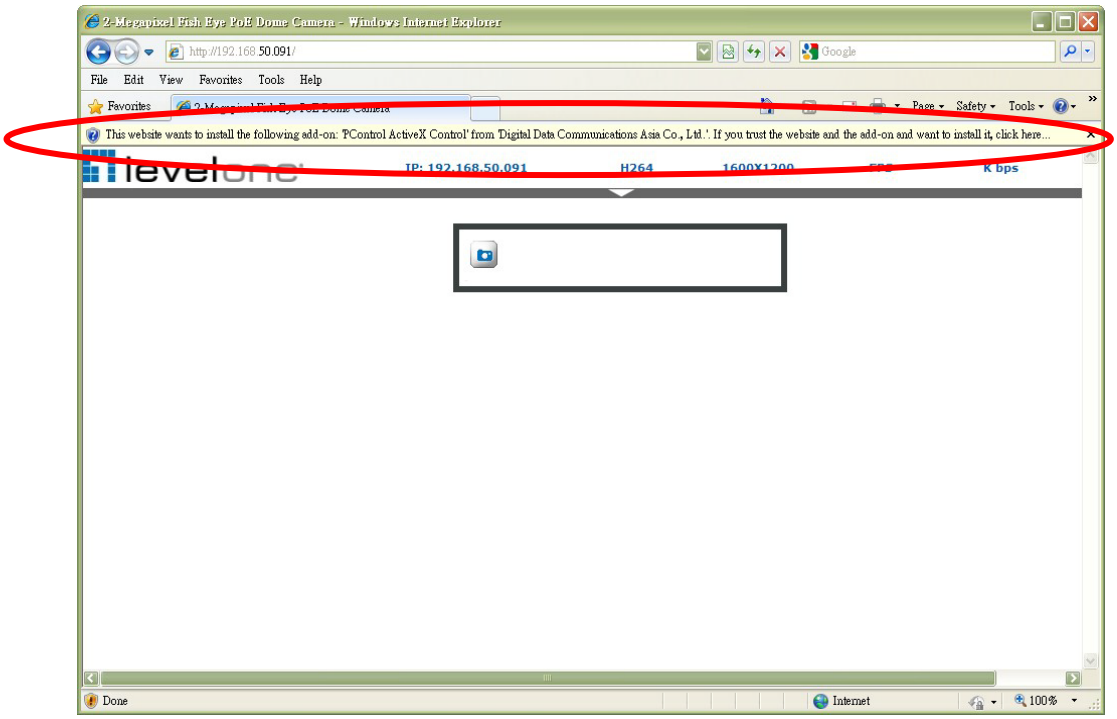


Open the Web-based UI of the selected camera

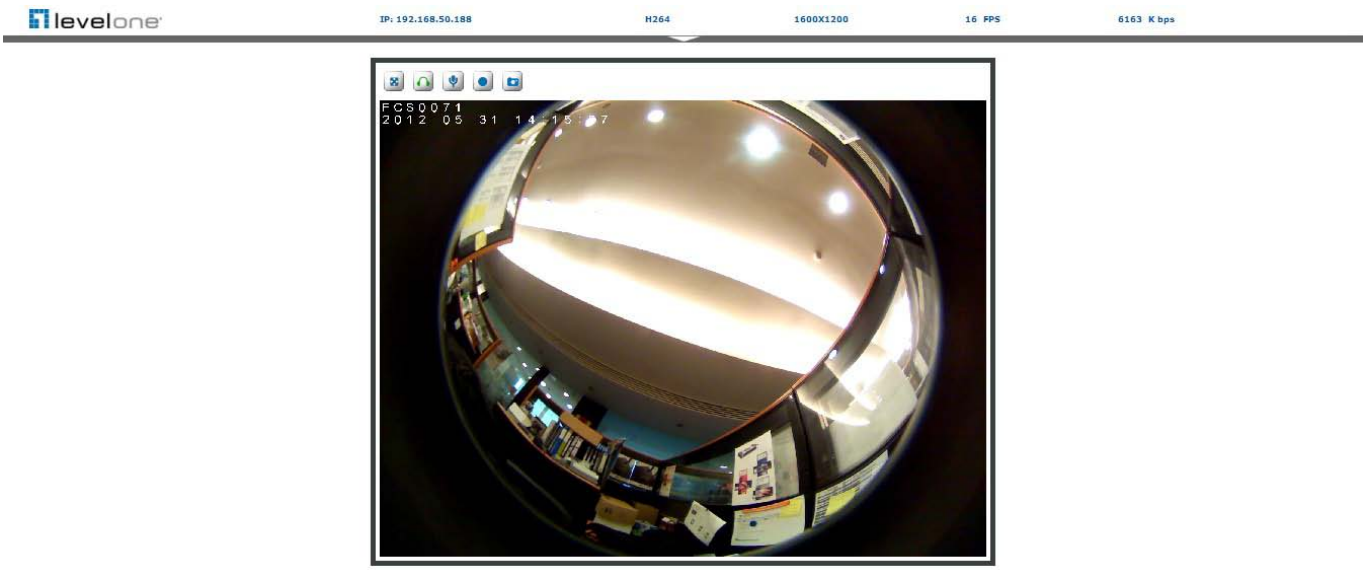
1. To access the Web-based UI of the selected unit, run the **Open Web** on the select item.



2. For first time user, there will be a prompt to install the ActiveX control. Confirm the installation as it is required to view the video stream and some operations.


2-Megapixel Fish Eye PoE Dome Camera - Windows Internet Explorer
File Edit View Favorites Tools Help
This website wants to install the following add-on: 'PControl ActiveX Control' from 'Digital Data Communications Asia Co., Ltd.'. If you trust the website and the add-on and want to install it, click here...
IP: 192.168.50.091
H264
1600X1200
K bps
Done
Internet

3. If the device has been configured correctly, the default Web browser will open to the home page of the selected device.



Verify and Complete the Installation from Your Browser

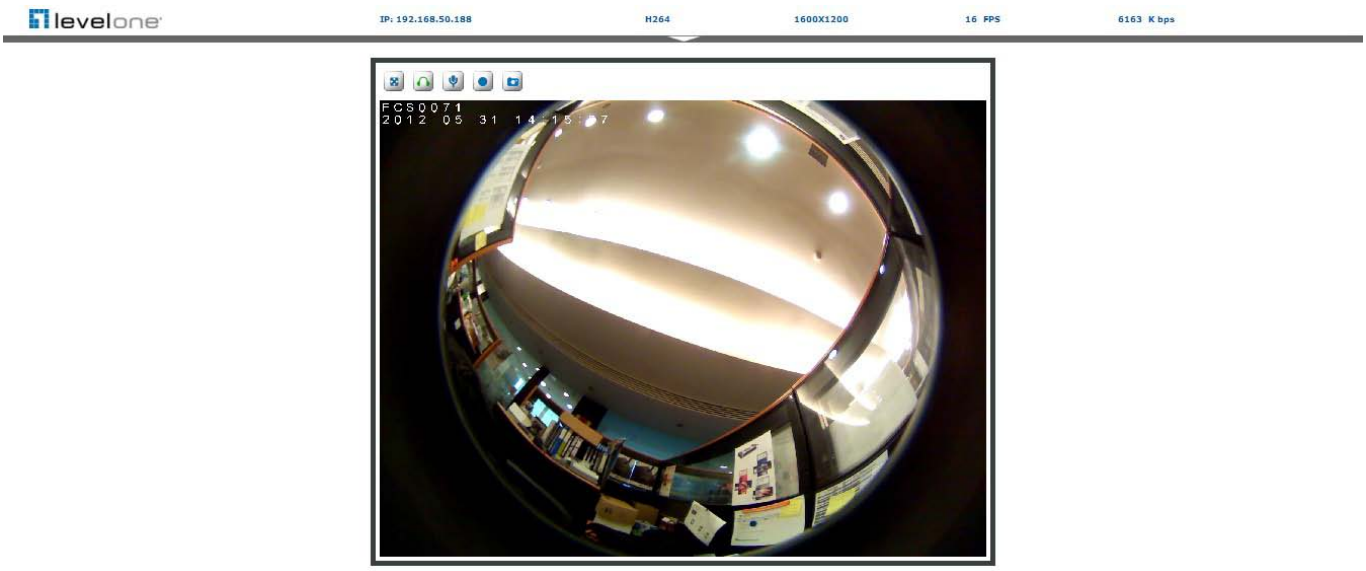
When browsing the Home Page at the first time with the Microsoft Internet Explorer™, you must temporarily lower your security settings to perform a one-time-only installation of the ActiveX component onto your workstation, as described below:

1. From the Tools menu, select [Internet Options]
2. Click the [Security] tab and then click [Custom Level] button to see your current security settings.
3. Set the security level to Low and click [OK].
4. Type the URL or IP address of your camera into the Address field.
5. A dialog box will pop up asking if the ActiveX control should be installed. Click [Yes] to start the installation.

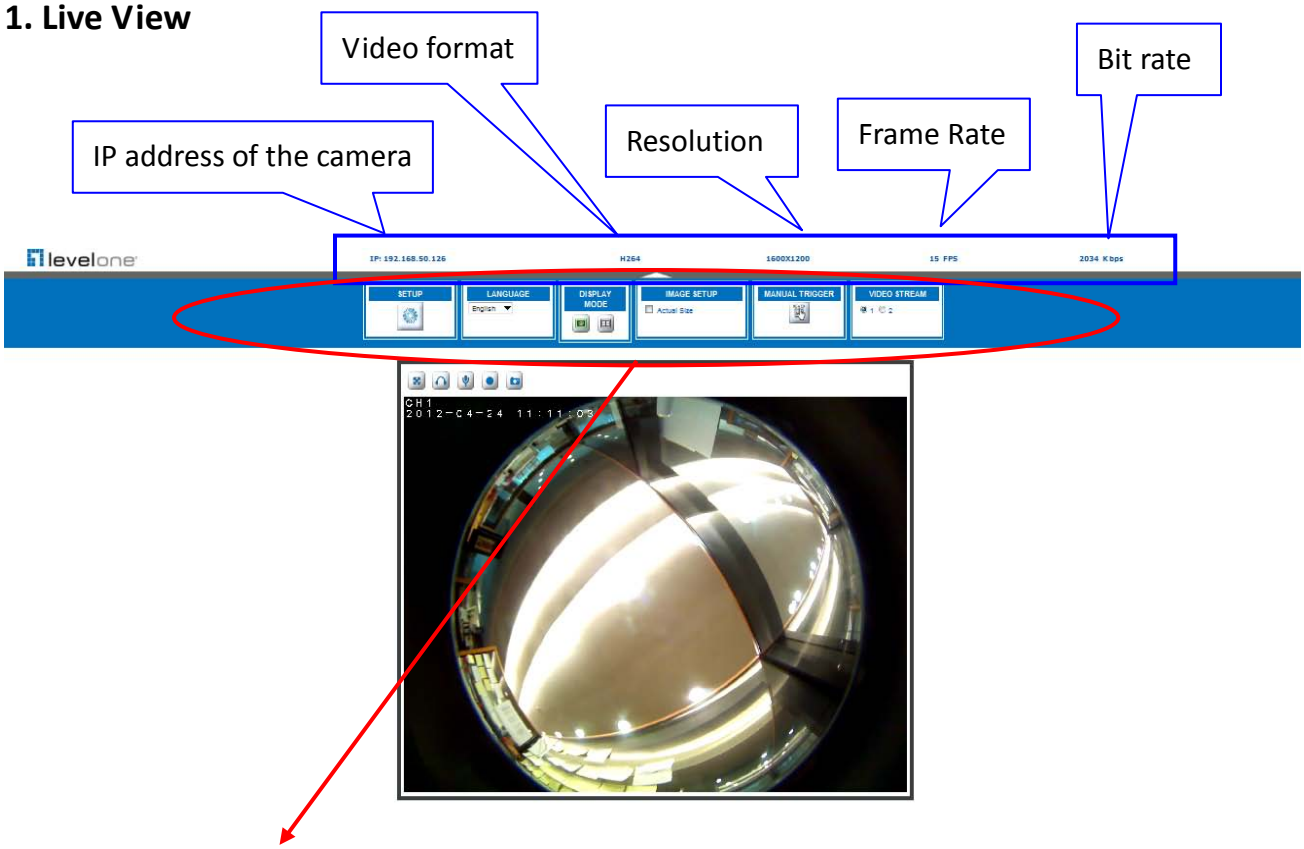
Once the ActiveX installation is complete, return the security settings to their original value, as noted above.

Using the Web UI

Start your Web browser and enter the URL or IP address in the Address field. The Home page of the camera is now displayed.



1. Live View



Button	Description
SETUP	Click for more general/advance camera settings
LANGUAGE English	Select languages among English, traditional Chinese and simplify Chinese
DISPLAY MODE	Select display mode to view the different type of the video layout.
IMAGE SETUP Actual Size	Check actual size to view the actual size (resolution) of the image
MANUAL TRIGGER	Applied as one of the trigger conditions
VIDEO STREAM 1 2	Choose among the 2 streams for viewing

Button	Description
	Full screen
	Listen the audio input from local end
	Talk function
	Record instant live video
	Snapshot the image

Configuration Pages List

Video

- General
- Advance

Camera

- General
- Advance

Event

- Event Server
- Motion Detection
- I/O ports
- Event Configuration

Schedule

- General
- Storage

Network

- General
- Advance
- SMTP (E-mail)
- DDNS

System

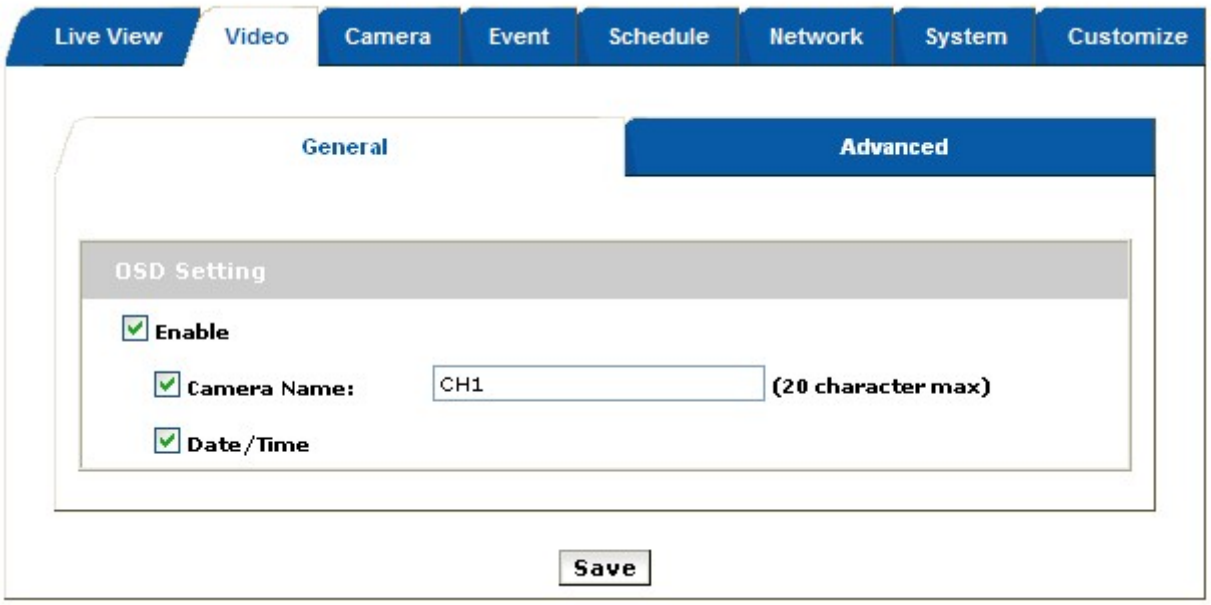
- Information
- User
- Date & Time
- Server Maintenance
- Log Service

Customize

- Style Layout

2. Video

General

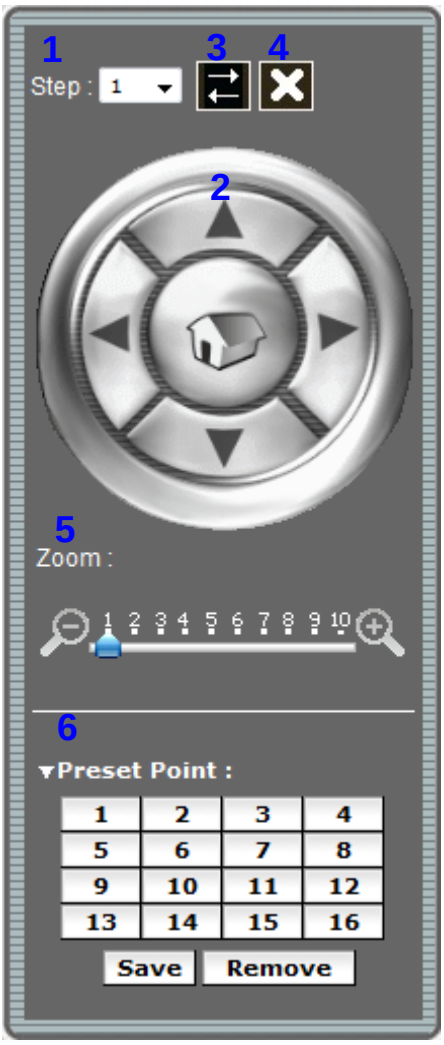


OSD Setting: Enable OSD to display camera name and date/time on the image. A line of text message (e.g. Camera Name or Position) and the date/time string are available to be selected for displaying or hiding on the images.

The PTZ function will display in Quad with source view, Double with source view , Double view and Triple view of Wall and Wall 720P Mount.

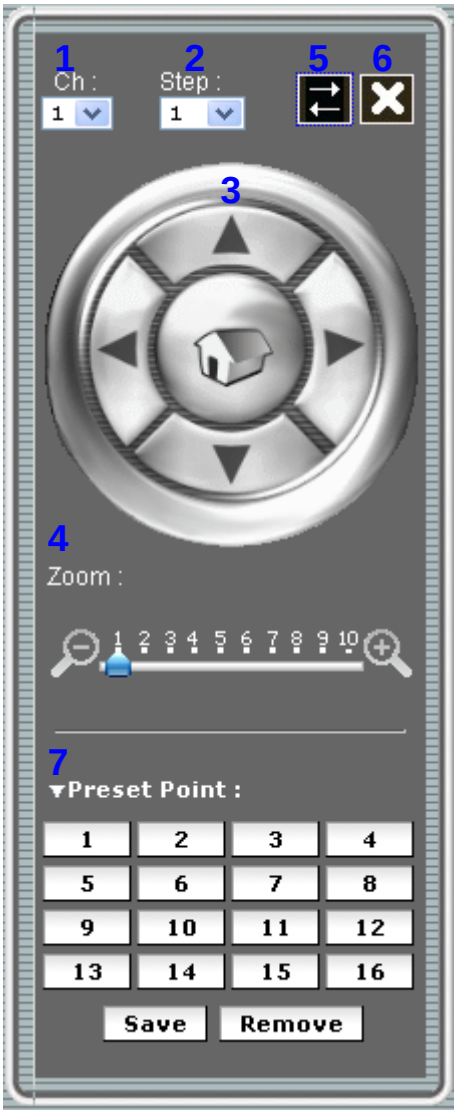
Click on the PTZ icon, the web will popup the control panel to control e-PTZ function of FCS-0071.

Double with source view PTZ control panel:



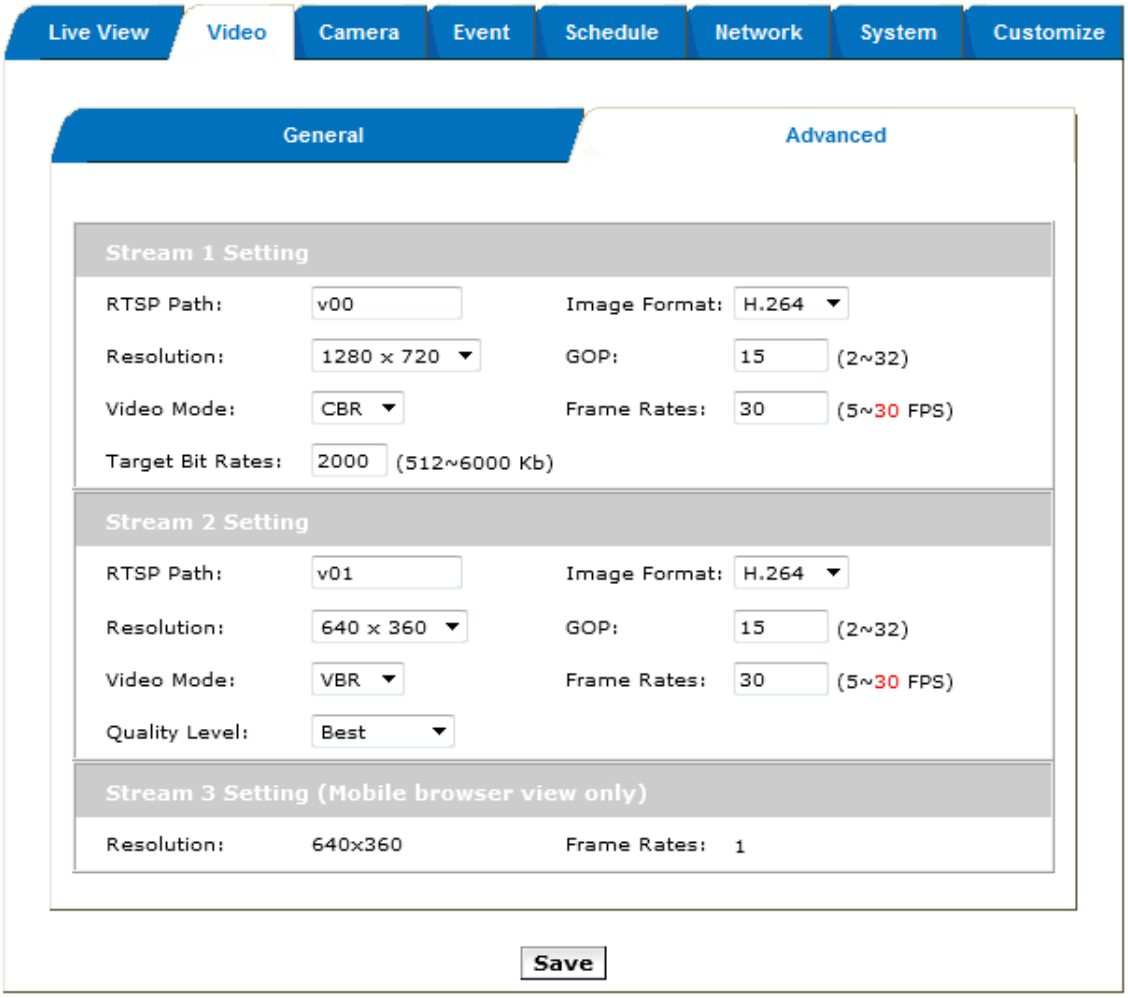
1. Step: Setting the speed of Pan function. (1~10)
2. Pan Arrow: Click to control Pan function.
3. Move the control panel.
4. Close the control panel.
5. Zoom: Digital zoom in/out.(1~10)
6. List of preset points. (1~16)

Triple & Quad with source & Double view PTZ control panel:



1. Ch：Select the channel. (1~4) & (2~4)
2. Step：Setting the speed of Pan/Tilt function. (1~10)
3. Pan Tilt Arrow：Click to control Pan/Tilt function.
4. Zoom：Digital zoom in/out. (1~10)
5. Move the control panel.
6. Close the control panel.
7. List of preset points. (1~16)

Advanced

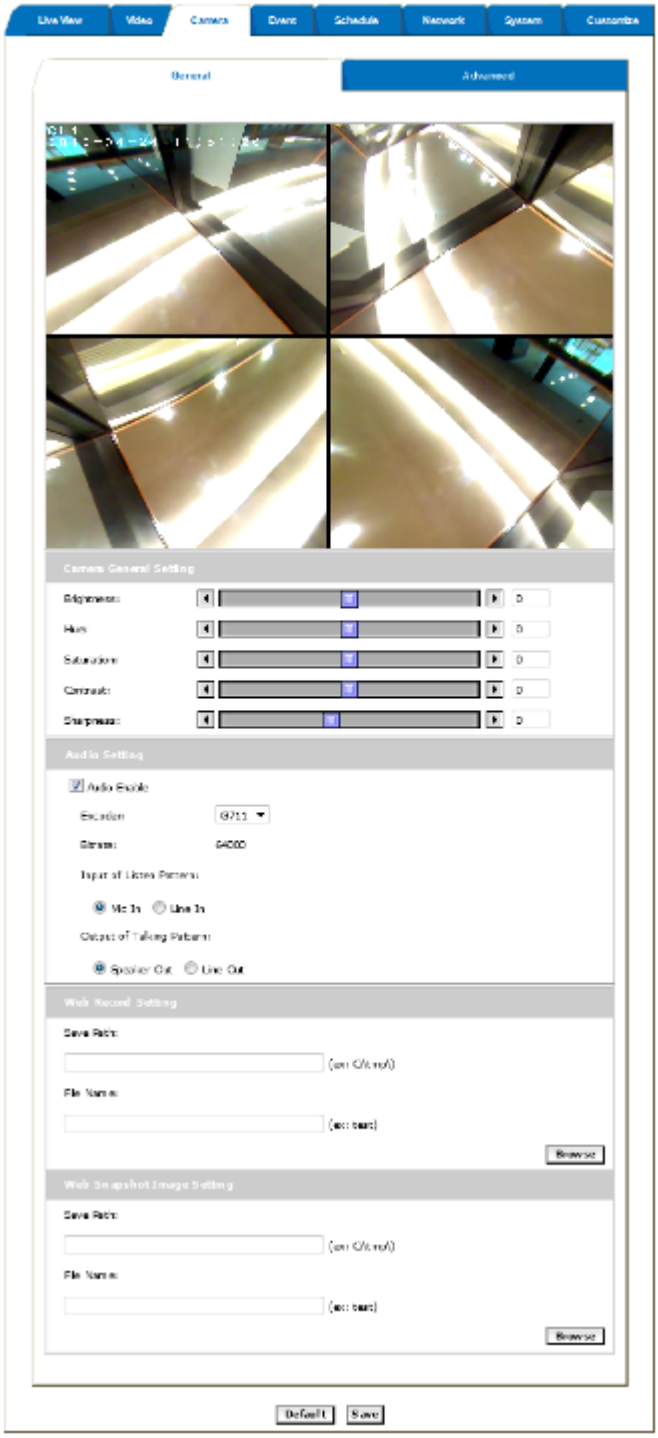


Stream 1 Setting:

- RTSP Path: It is the stream ID used for RTSP client streaming connection, such as VLC player. (default v00)
- Resolution: 1600x1200, 800x600, 640x480.
- Video Mode: Choose between variable bit rate (VBR) and constant bit rate (CBR)
  VBR-> Choose quality level from best to standard, for some environment it is very important to ensure the video quality level but after selecting video quality level, the bandwidth consumption will be variable.
  CBR-> Choose target bit rate range from 1000kb to 6000kb, for some environment it is very helpful for network bandwidth management but the video quality will be variable up to the complexity of video scene.
- Image Format: 2 kinds of format to choose from; MJPEG and H.264.
- GOP: Choose the number of P-frame or B-frame between I-frame from 2 to 32, the shorter of the number indicated the higher video quality you may get, while it will consumer more network bandwidth and storage size.
- Frame Rates (FPS): Choose the number of frames to display per second from 5 to 30.

3. Camera

General



Camera General Setting:

- Brightness: the luminance of image view.
- Hue: refer to pure color, it can modify the different display of specific color such as red, green or blue.
- Saturation: intensity of a specific color.
  The 3 correlates are referring image appearance in terms of color/vision. These are adjustable from this page.
- Contrast: the difference in color and light between parts of an image.
- Sharpness: the sharpness of camera.
- Rotation: rotate the image, so it looks up-side down. This can be applied when camera unit must be ceiling mounted and the image is therefore reversed.

Audio Setting:

- Audio Enable: Enable this option, so the video stream will be transferring accompanied with the audio data

Web Record/Snapshot Setting:

- Web Record / Snapshot: define the location where snapshot images and video clips will be stored. The file name is referring to the prefix of the actual file name of each snapshot image or video clip generated.

Default:

- Set [camera general setting] and [audio setting] back to default
  Note: Will not change the configuration of [Web Record Setting] and [web Snapshot Image Setting].

Save:

- Save the changes that have been made

Advanced

White balance:

- Adjustment to compensate for different environments in terms of light source.

Exposure:

- Anti-flicker setting for image sensor to fit the frequency of light (power) source. For instance, the power frequency is 50Hz for most European countries, while 60Hz is typically for US. This setting is therefore regionally different. **Note: Default setting is 50Hz**

Max Exposure Time:

- Referring to the shutter speed.

Max Gain Control:

- The amplification factor for the incoming light.

Infrared (IR) Cut Filter:

- The default is automatically switched according to light intensity. Enable indicate the filter is enable to cut IR light to make sure the color is correct, Disable indicate the filter is disable and allow the infrared (such as IR LED illuminator) to enter the camera to execute low lux surveillance application.

Day / Night Threshold:

- The threshold to change Day or Night mode**,** default is 20 lux, it indicate that when the lux is lower than 20 lux, the camera will automatically change to night mode and allow Infrared to enter the camera.

Color/Mono Mode:

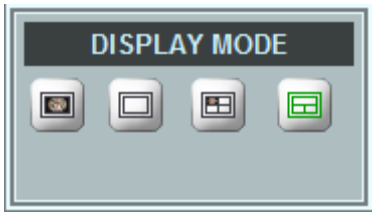
- The default is automatically switched according to light intensity. It can also be forced to display color image even in a low light environment.

Camera Mount:

- Choose camera mounting type; Wall, Ceiling, Wall 720P.

Wall Mount:

- Choose Wall mount type, Go back to Live view, there are 4 kinds of video layout to choose including Original view, Broad view, Quad with source view and Triple view.



1. Original view:

2. Broad view:

3. Quad with source view:

4. Triple view:

Ceiling Mount:

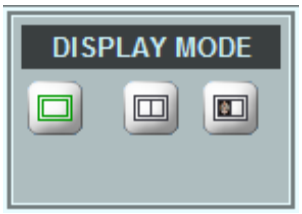
- Choose Ceiling mount, Go back to live view, there are 2 kinds of video layout to choose from; Original view, Quad view.

1. Original view:

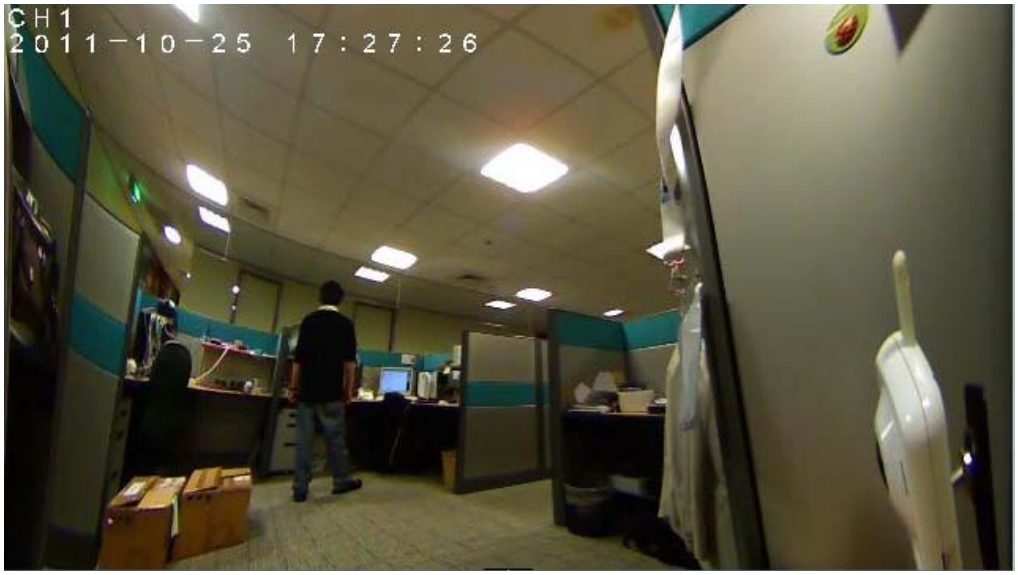
2. Quad view:

Wall 720P Mount:

- Choose Wall 720P mount type, Go back to Live view, there are 3 kinds of n video layout to choose including Broad view、Double view、Double with source view



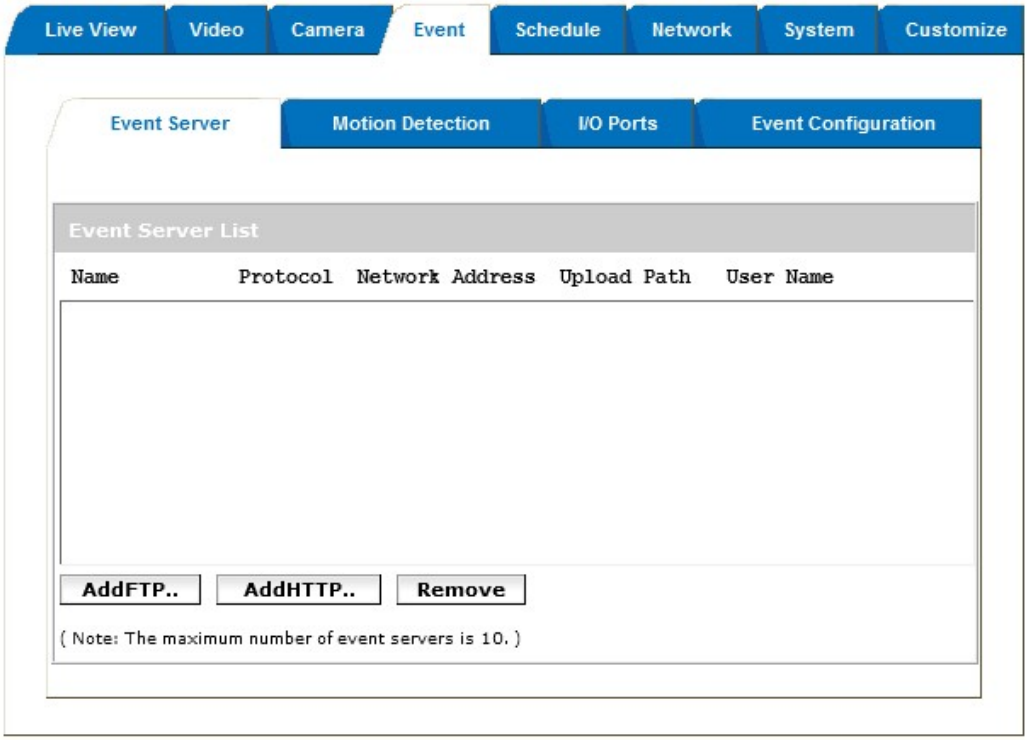
1. Broad view:



2. Double view:

3. Double with source view:

4. Event



Event Server

Click on the **[Add FTP]** to expand FTP server setting.

FTP Server:

- Name: Give a name for the FTP server
- Network Address: Input the network address of the FTP server
- Upload Path: Choose the desired upload path for events
- Port: Input the port number of the FTP server

Login Information:

- Username / Password: Input the username and password of the FTP

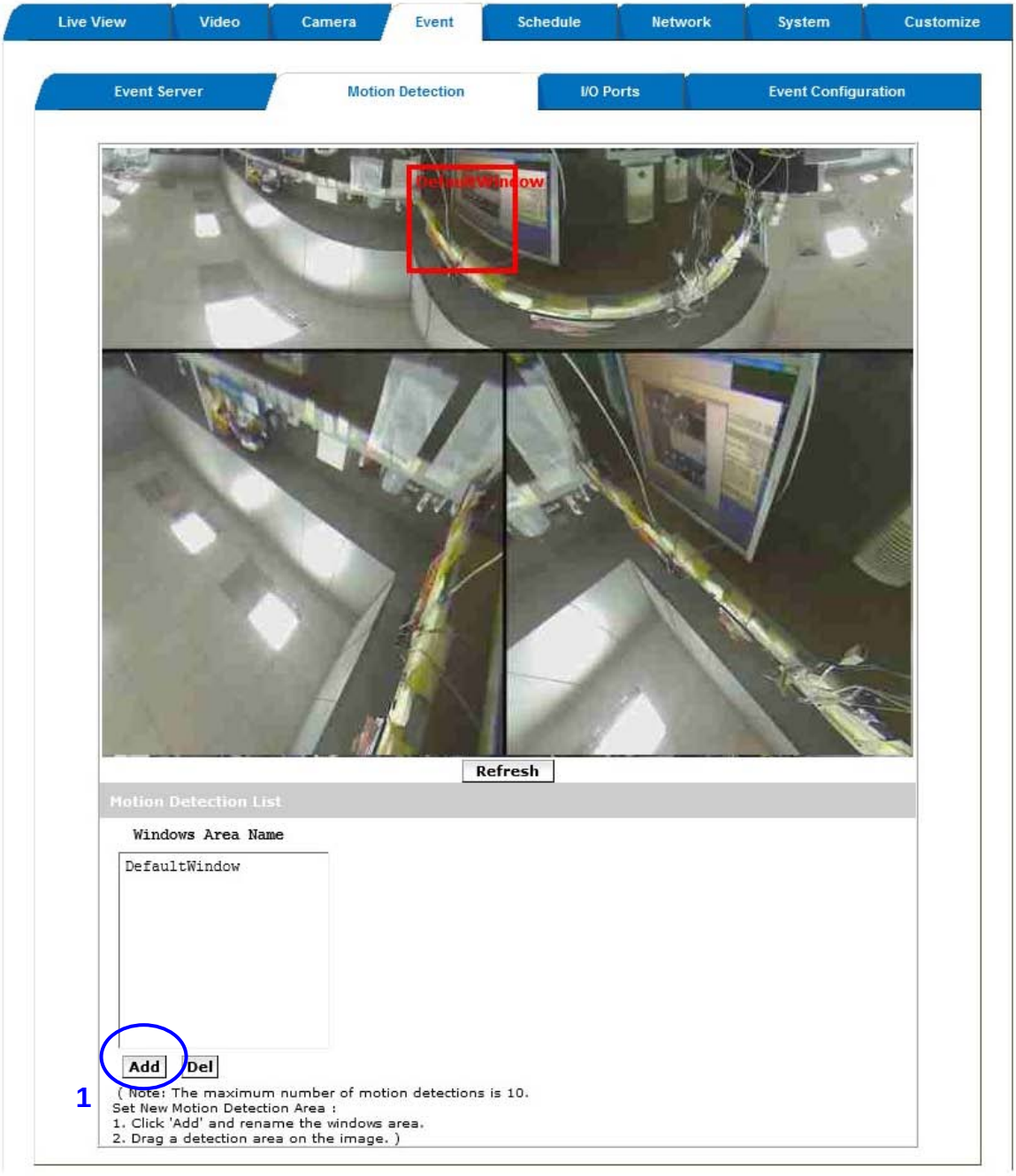
Click on the **[Add HTTP]** to expand HTTP server setting.

HTTP Server:

- Name: Give a name for the HTTP server
- URL: Input the network address of the HTTP server
- Username / Password: Input the username and password of the HTTP

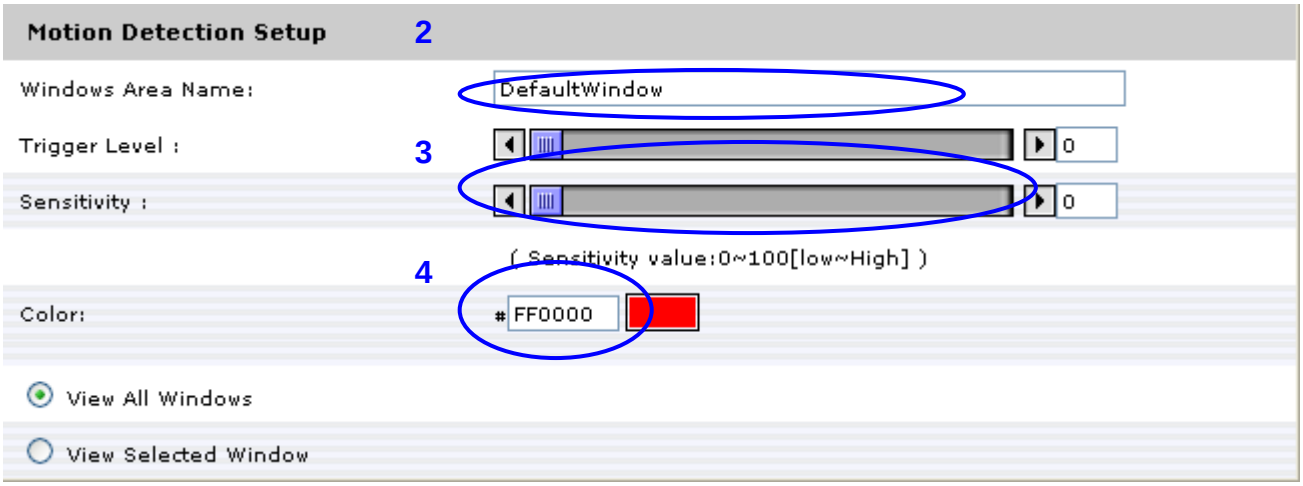
Click **[Remove]** to delete selected event servers. (Circled in red)

Motion Detection

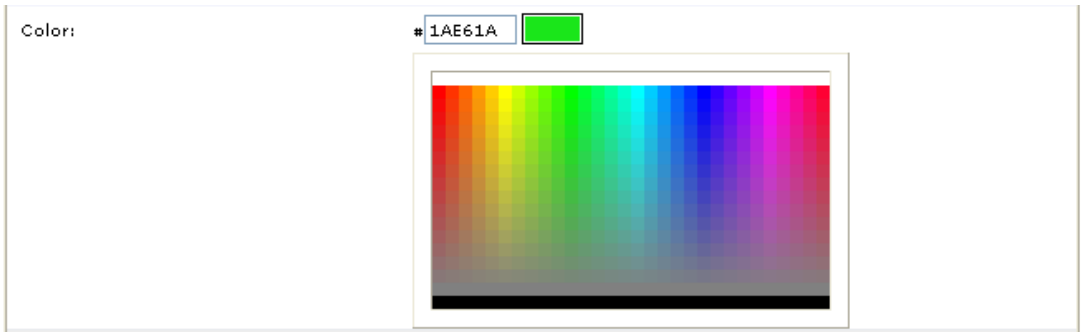


To add a motion detection area:

1. Click on **[Add]** to set up a detection area.
   (Set up panel will be expanded)

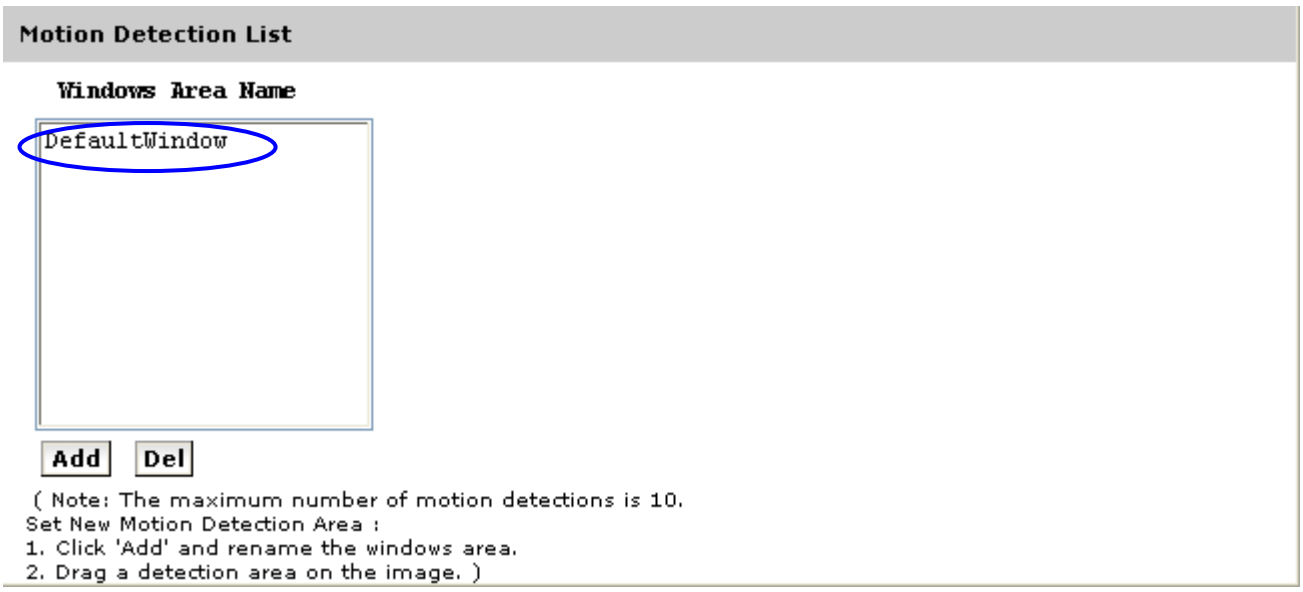


2. Give a name to this window area.
3. Select the trigger level and sensitivity for this detection window. (0~100, low~high)
4. Select color for detection window.



5. Draw detection window on the image.

6. Once everything is done, click on **[Save]** to save the configuration made.
   Configured detection window will be displayed in motion detection list. (Circled in blue)

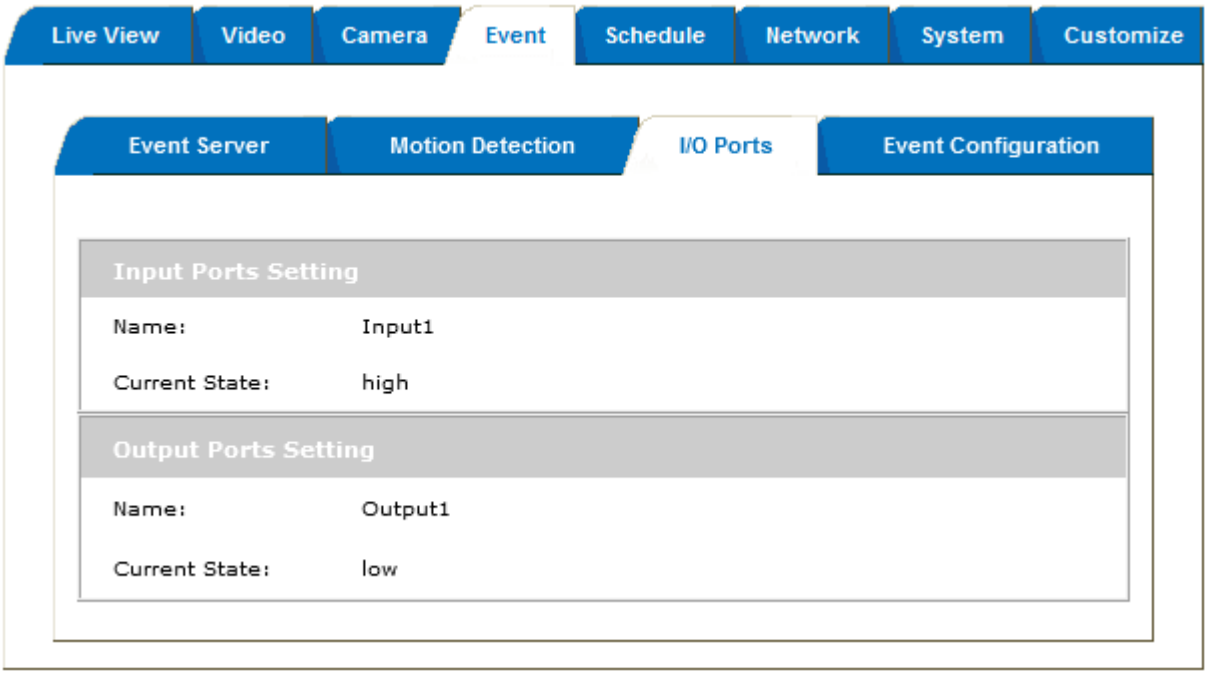

Motion Detection List
Windows Area Name
DefaultWindow
Add
Del
(Note: The maximum number of motion detections is 10.
Set New Motion Detection Area :
1. Click 'Add' and rename the windows area.
2. Drag a detection area on the image.)

Note:

1. Maximum number of detection window is 10.
2. Motion Detection windows need to be modified if users changed video layout.

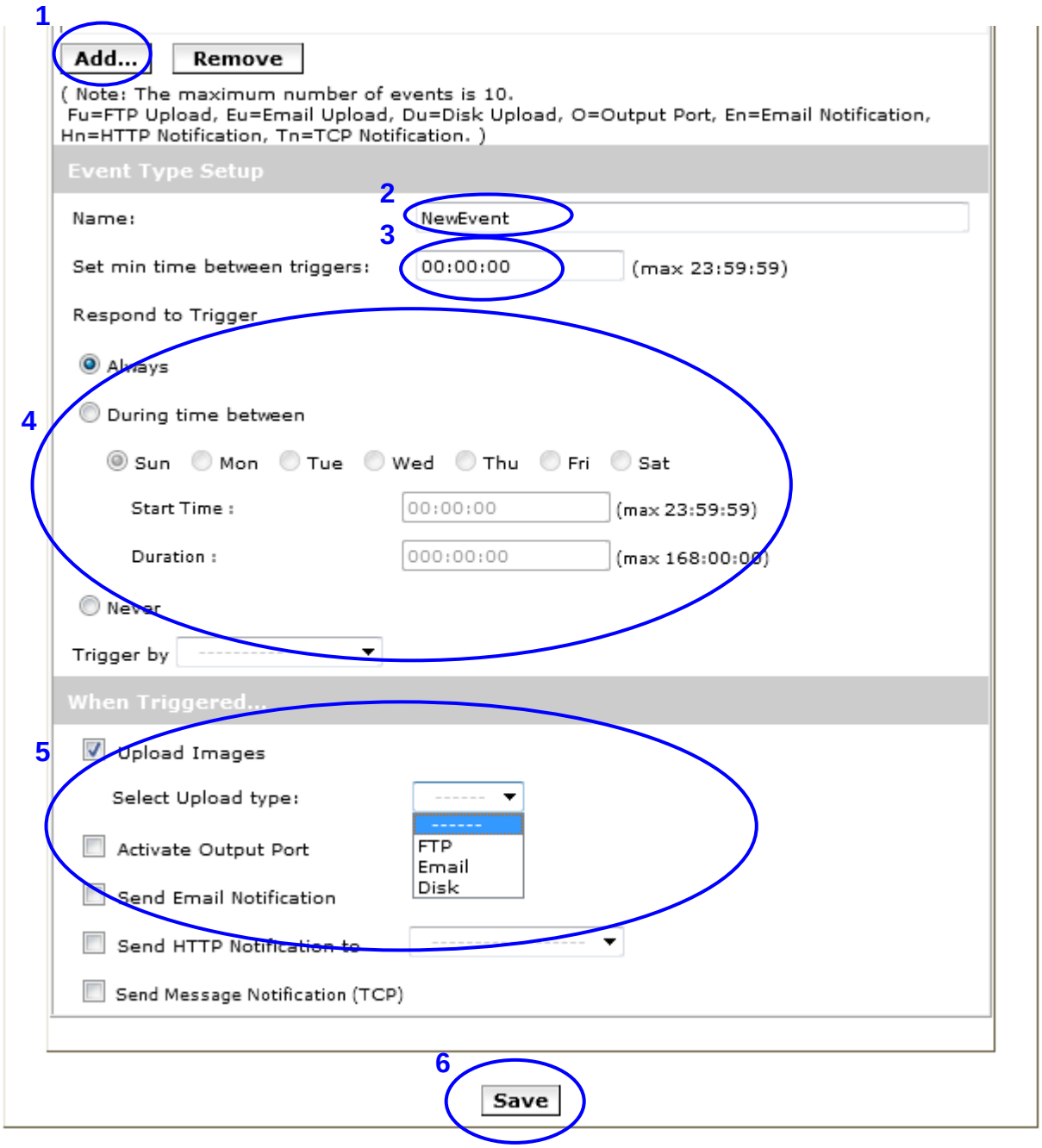
I/O Ports

This model supports 1 photo-coupled relay inputs and 1 relay outputs, see "**I/O Terminal Connectors**" for detail pin description and application. The tab shows the status of them; with external trigger/alarm devices.



Event Configuration

The Event Configuration is to assign the actions responding to the specified events (Trigger Conditions). The table lists the configured events. Click on "Add…" or choose an event from the list to expend the panel for detail configurations. "Remove" is to delete a selected event



1. To add an event trigger, click on **[Add]** and setup panel will be expanded.
2. Give a name to this event.
3. Set the time interval between each trigger.
4. Set the time period for the trigger. Choose "Always" or "During time between" or "Never".
5. The trigger condition is Motion Detection.
   The responding actions can be "Upload images" and "Activate Output Port" and

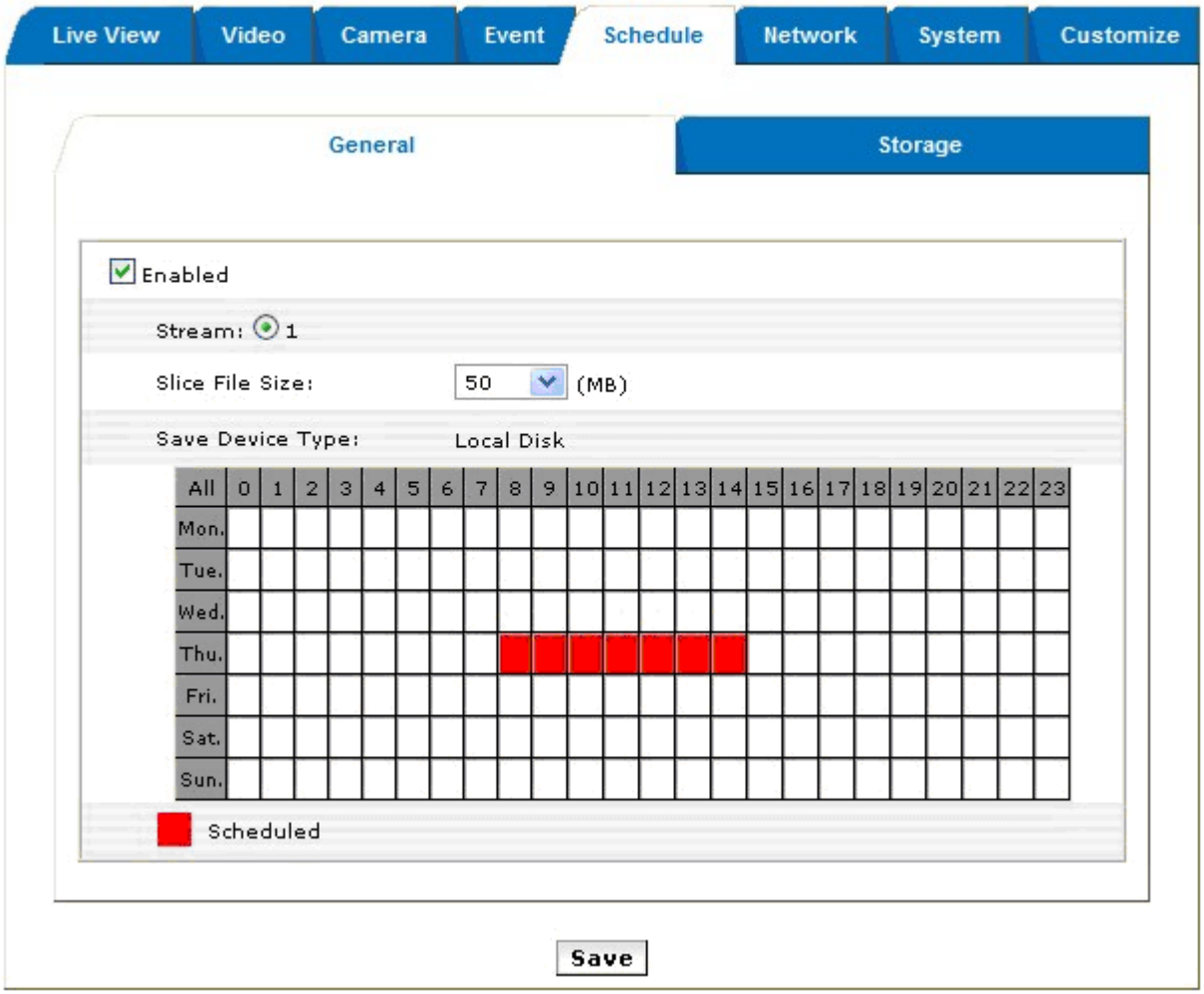
"Send Email Notification" and "Send HTTP Notification to" and "Send Message Notification (TCP)".

6. Click on **[Save]** to save the configuration made.

5. Schedule

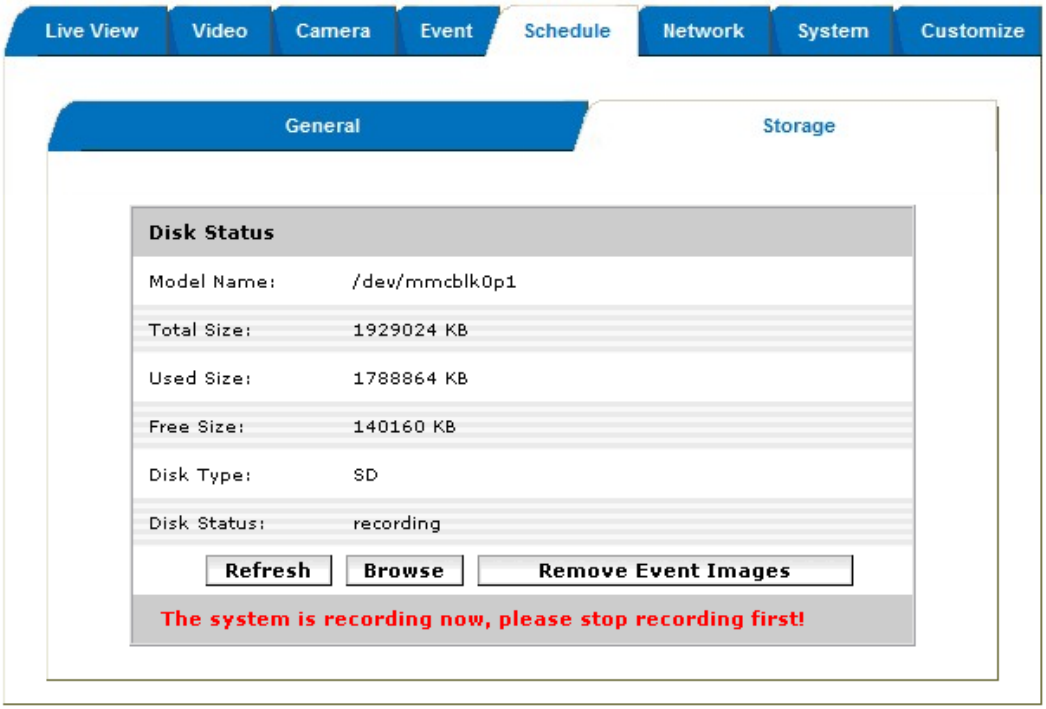
General

Define the day (specified by days of a week) and time (specified by each single hour) for that will be recording during the scheduled period. Note that only video data will be recorded. User can select which video stream should be recorded, and the size of each sliced file. When the check box is ticked and setting is saved, recording process starts. Recording files are saved to the Micro SD storage.



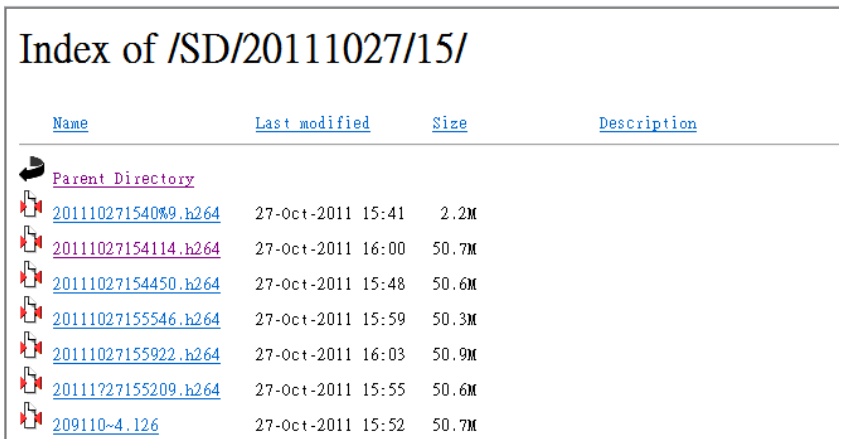
Storage

Display the storage information, includes disk size info, type and status. The warning message shows when recording is on process; Micro SD card should not be removed during the recording process.



The "Browse" button allows viewing the list of recorded files. The web page will then be redirect to the root path of the SD storage (if one is inserted). The list includes couple of folders, the Oevent_images which contains all the still images captured by any event trigger, and folders specified by date where the recorded video files are located.

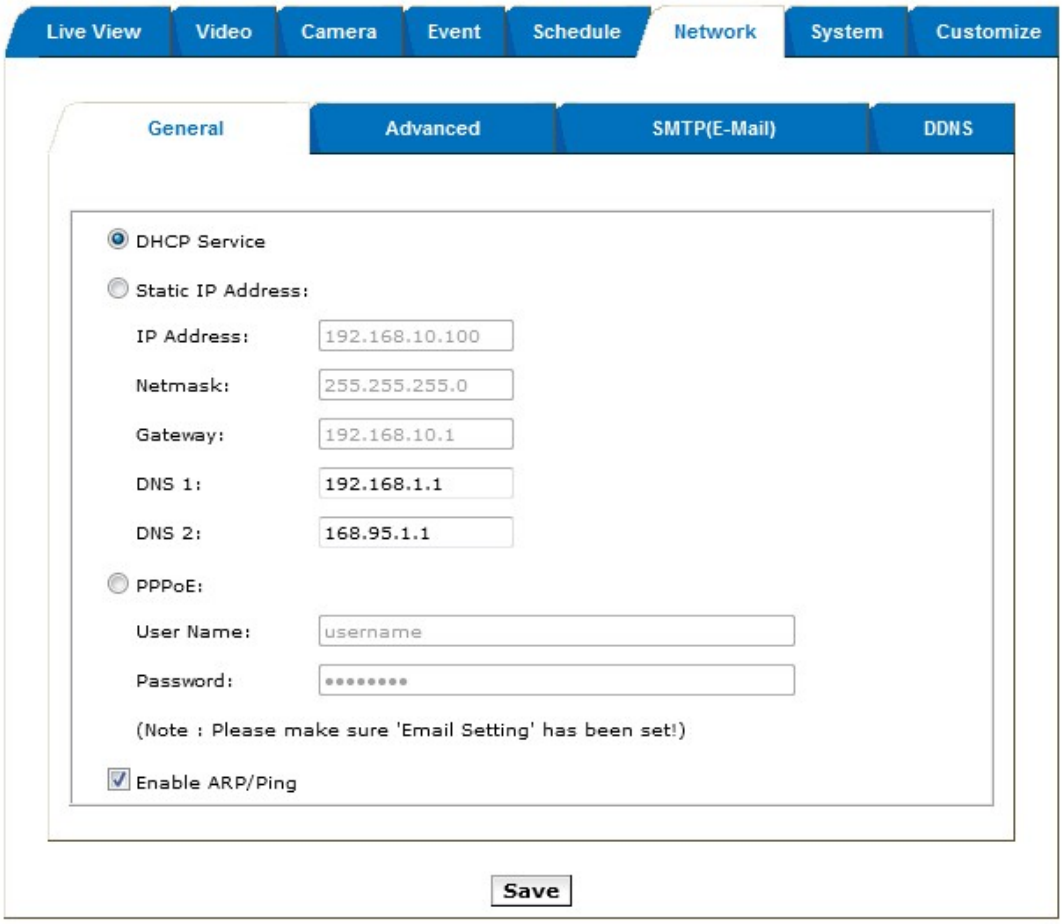
The recorded files are named in date_time format, and the extension file name is ".h264". While file is in h264 raw format, it can be played in VLC player. Note that the recorded file includes video only; no audio information is recorded.



6. Network

General

Device IP configuration, includes DHCP and Static IP setting. "Enable ARP/Ping" enable device to accept ARP or ping packets from the network. Disable this option may provide extra security from intentional ping.



Advanced

Enable or configure other network functions.

NTP: Configure a NTP (Network Time Protocol) server, so that the device system date and time can be synchronized with a specified Time Server or DHCP server.

HTTP: set the HTTP port that will be applied for Web UI access.

RTSP: set the RTSP (Video) port for video data transmission.

Bonjour: Enable Bonjour service, so that the device can be discovered with "Bonjour" service applied.

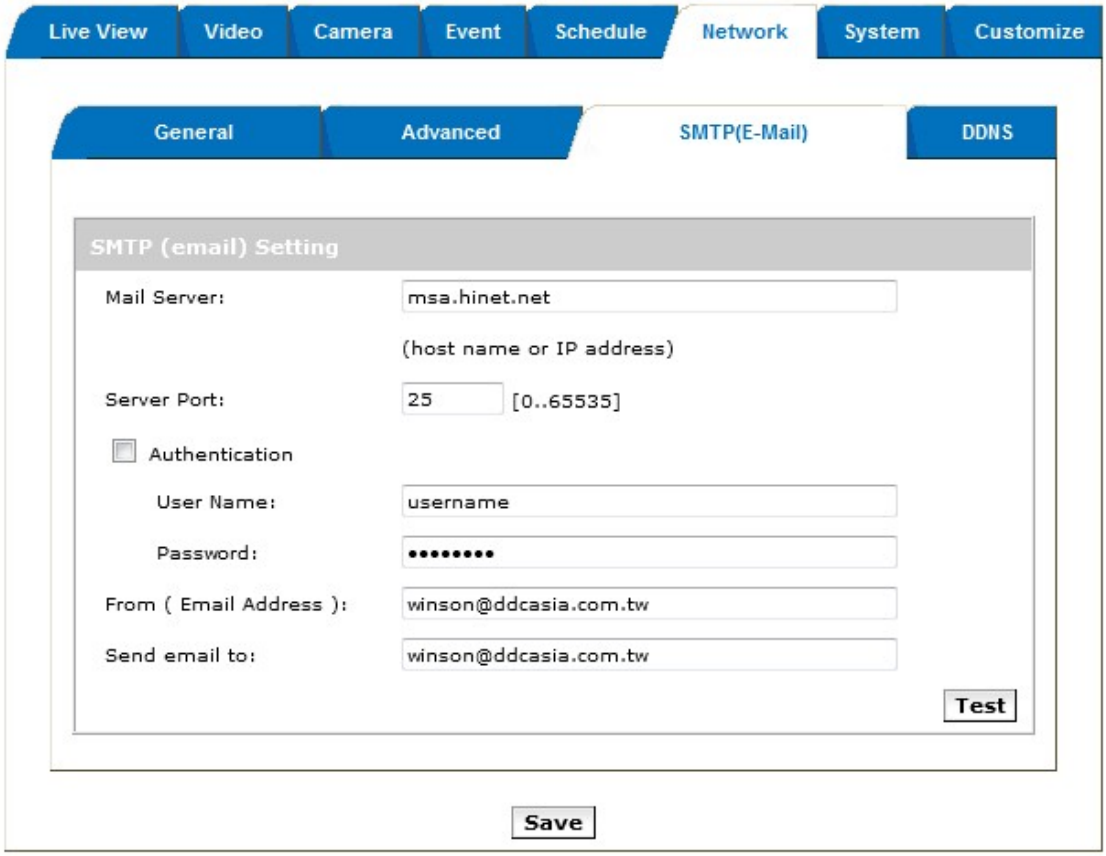
UPnP: Enable UPnP, so that the device can be discovered in an UPnP Compliant Network.

NAT Traversal: Enable NAT traversal, so that client from Internet can have access to the devices behind the Router.

Note: with UPnP enabled, the IP Sharing device (Router) capable of UPnP function will automatically be noticed with the device's NAT port.

SMTP (E-Mail)

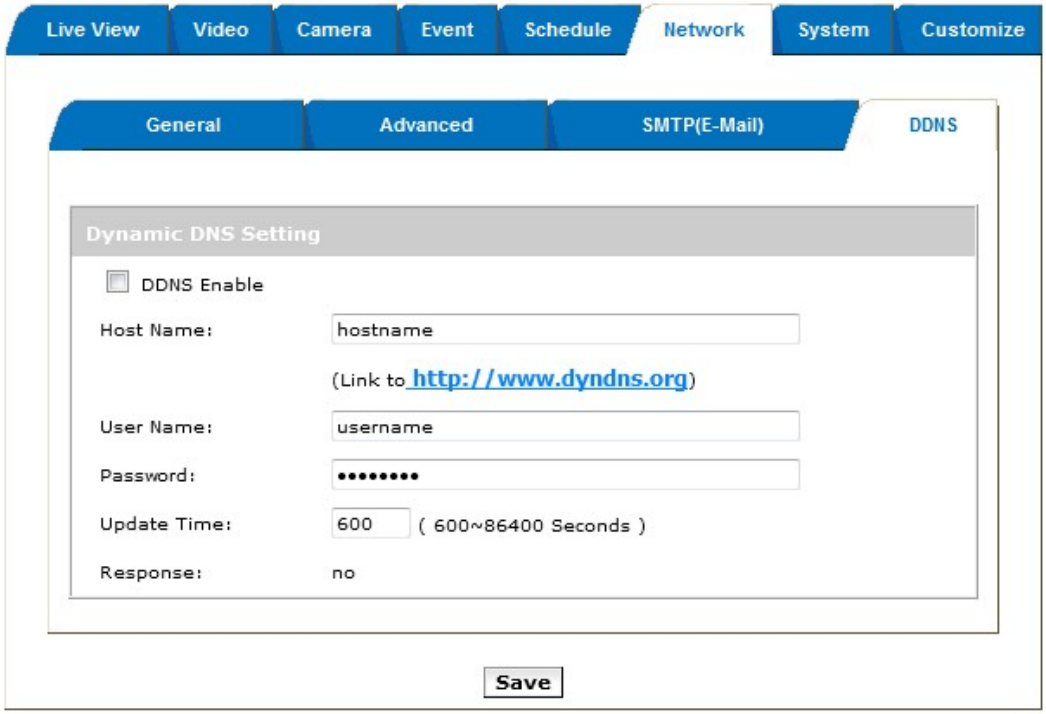
Configure an email host in the device that will send email on behalf of the configured email account in a circumstance like sending an email notice to a specified mail address (Event Configuration). Complete the Mail Server, Server Port, Authentication information (if required) and the sender email address.



DDNS

Dynamic DNS configuration; the network device can be assigned with a host name by registering this service (Internet access required).

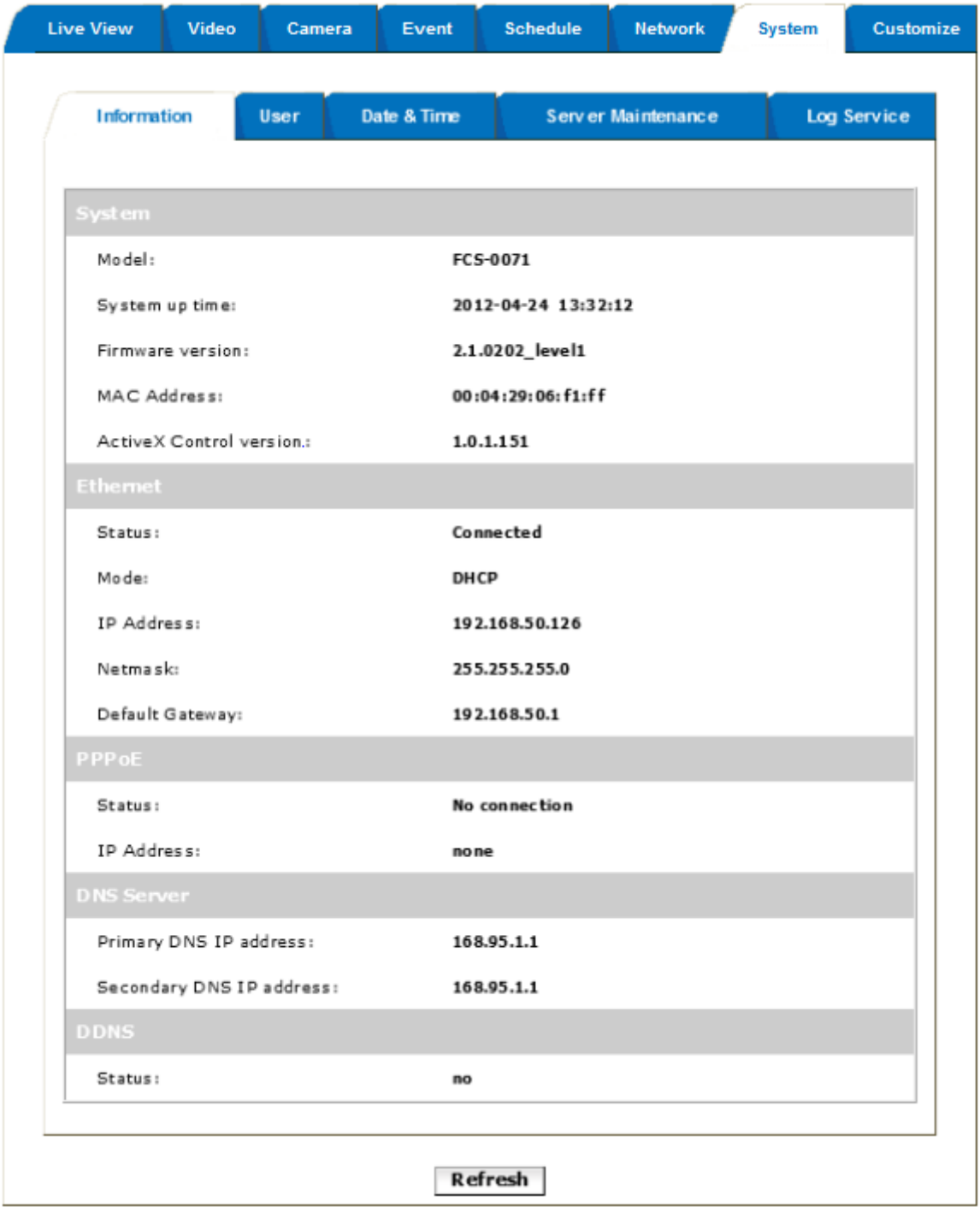
Host Name: Assigned name that will be used for access to the device
User Name/Password: Account authentication for logging to this service
Update Time: Periodically, the device updates its access info to sever in the configured time.
Response: the device responds the connection info.



7. System

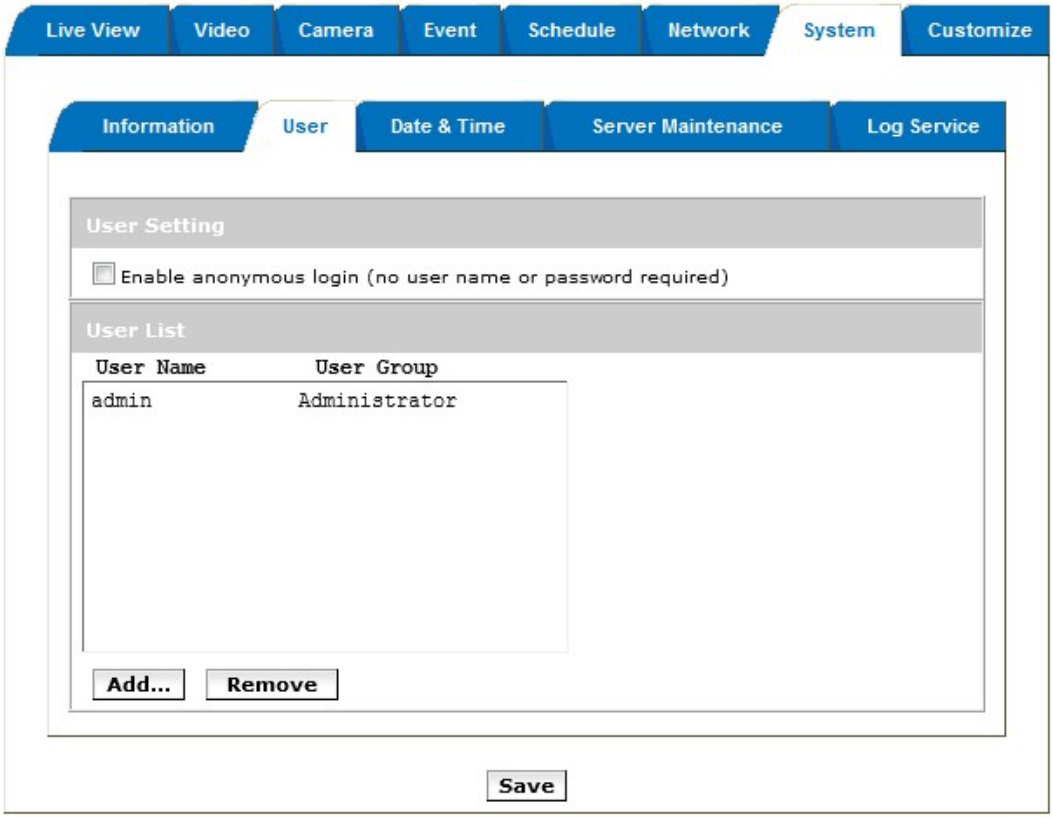
Information

Lists of System and Network configurations



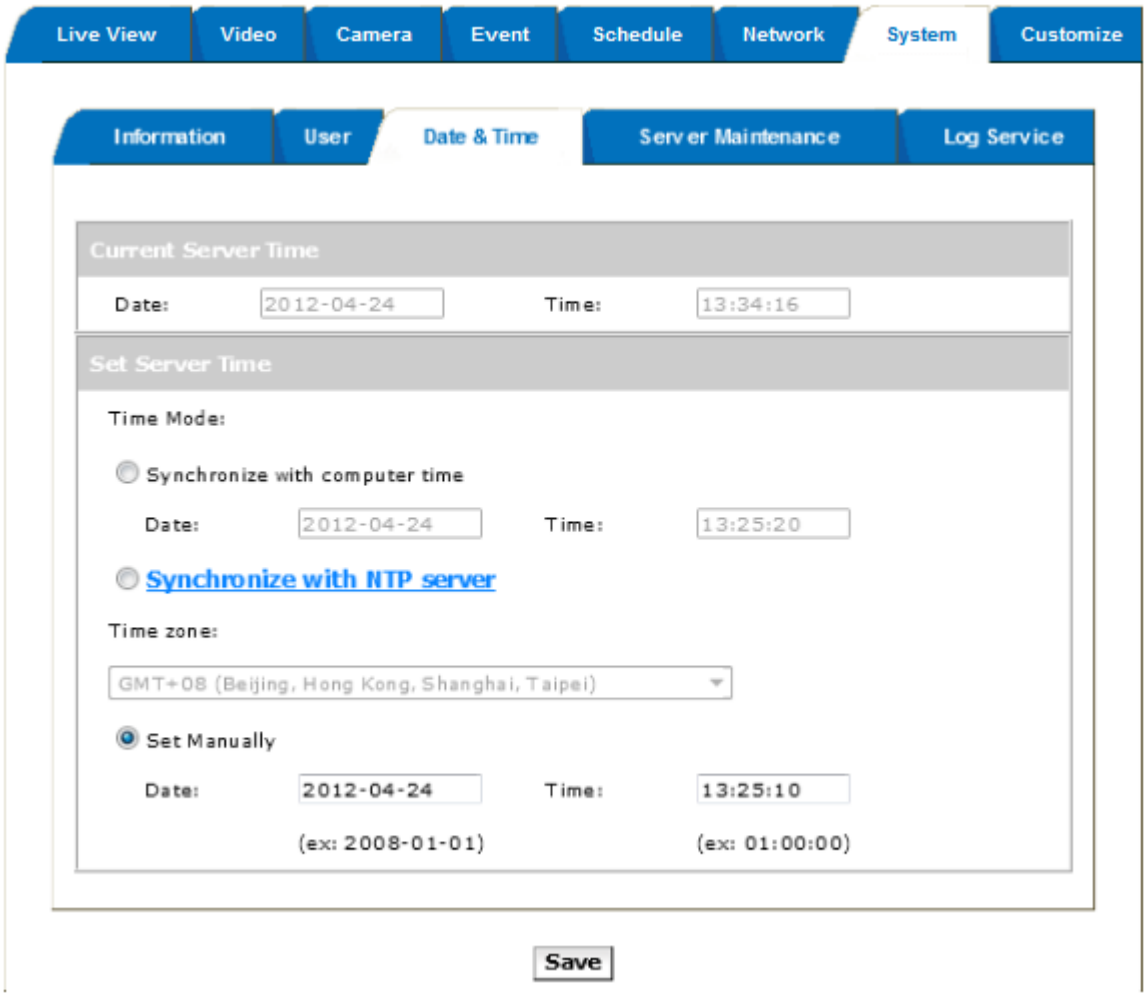
User

Login users for Web access and operations; authentication required. The Check box is for anonymous logging on to the live view page. Logging for further configurations will still require user name and password.



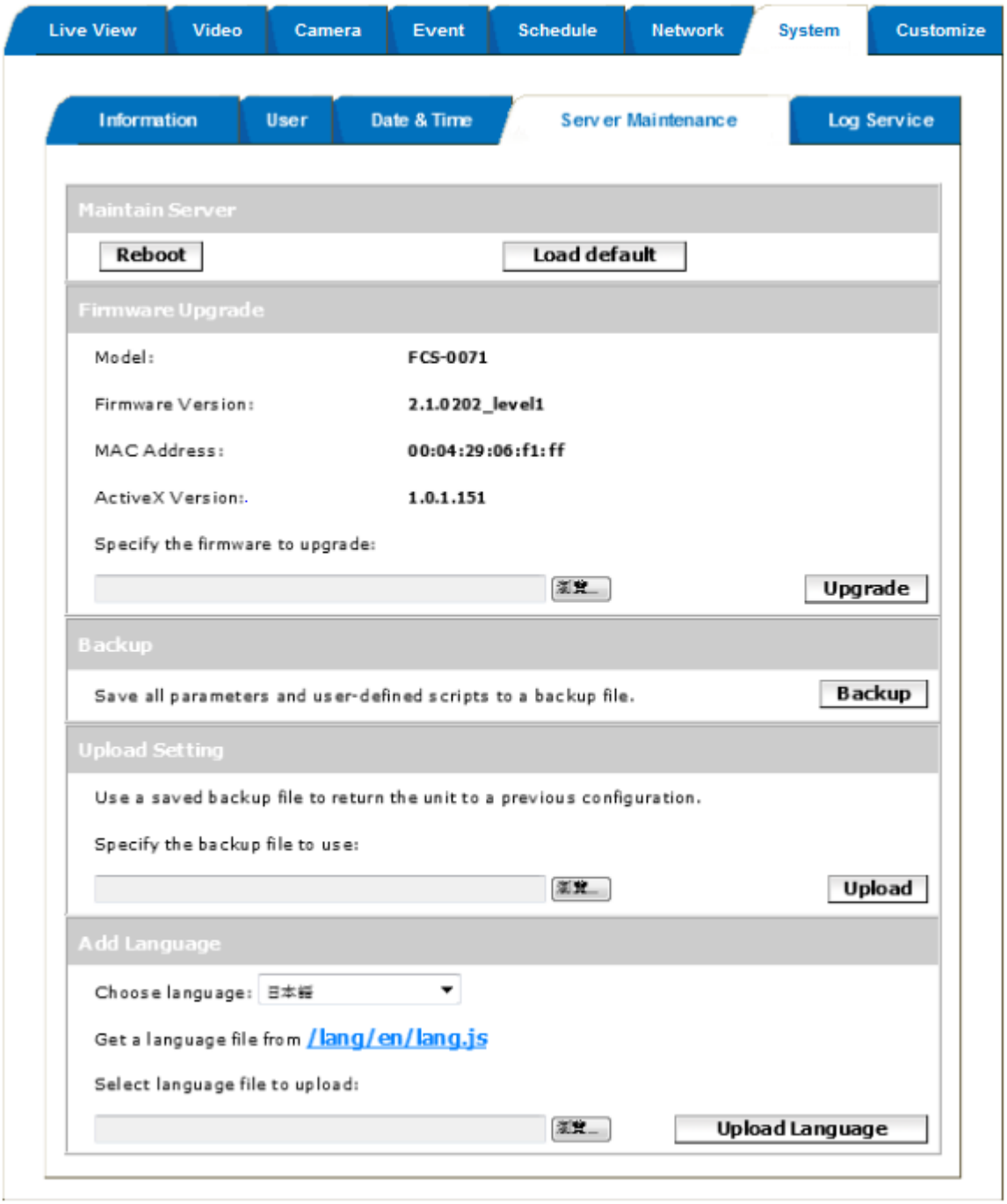
Date & Time

System date/time configuration. Options of synchronizing with PC and NTP server are provided for automatic adjustment.



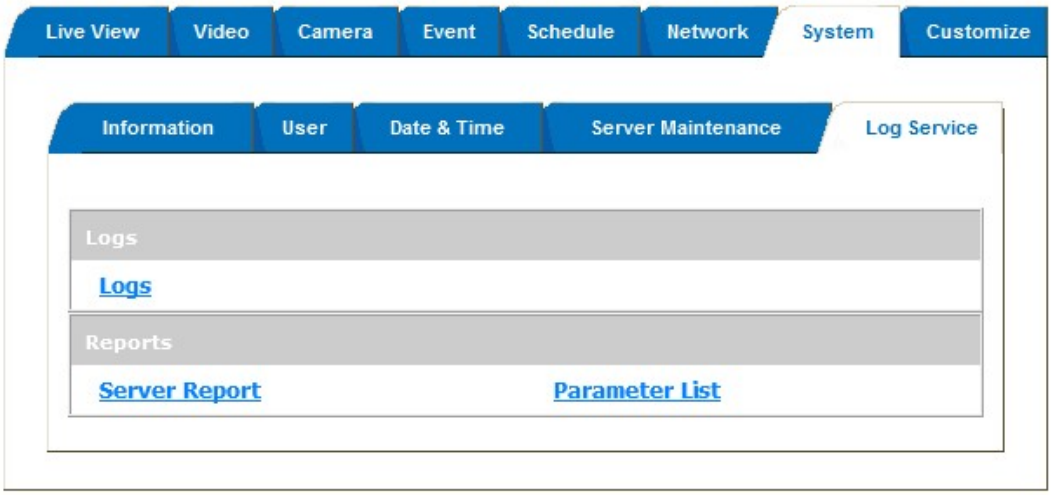
Server Maintenance

This page provides tool for system maintenance; Reboot and Load default settings, as well as functionalities of launching upgrade process, backup/restore user settings and language defines.



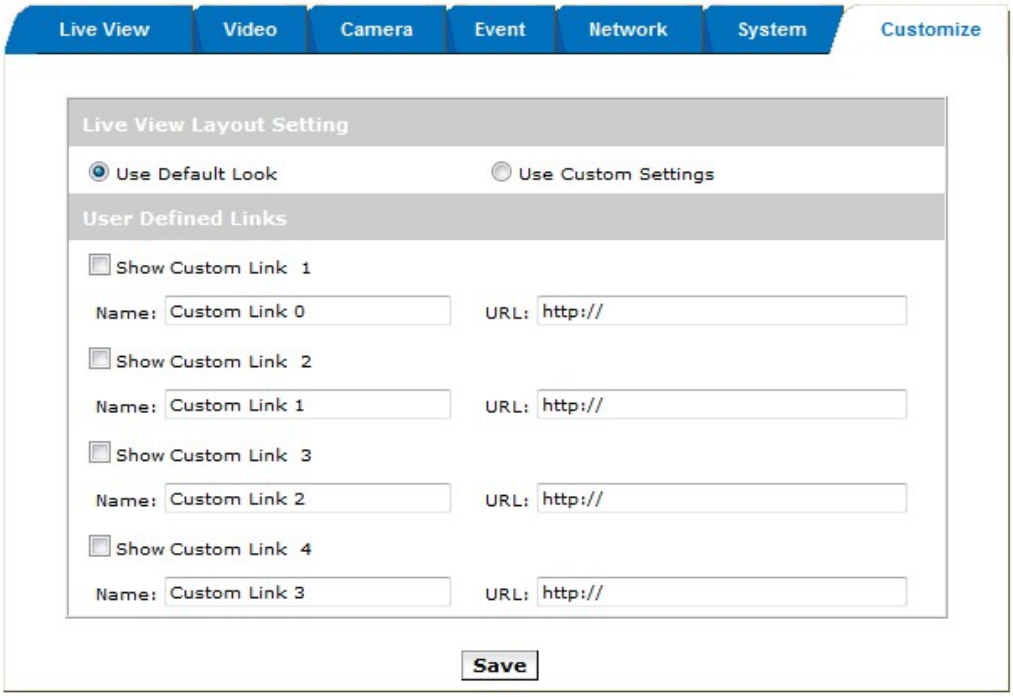
Log Service

Most system operations and / or process will be kept in a log system. The link provides the review of these records.



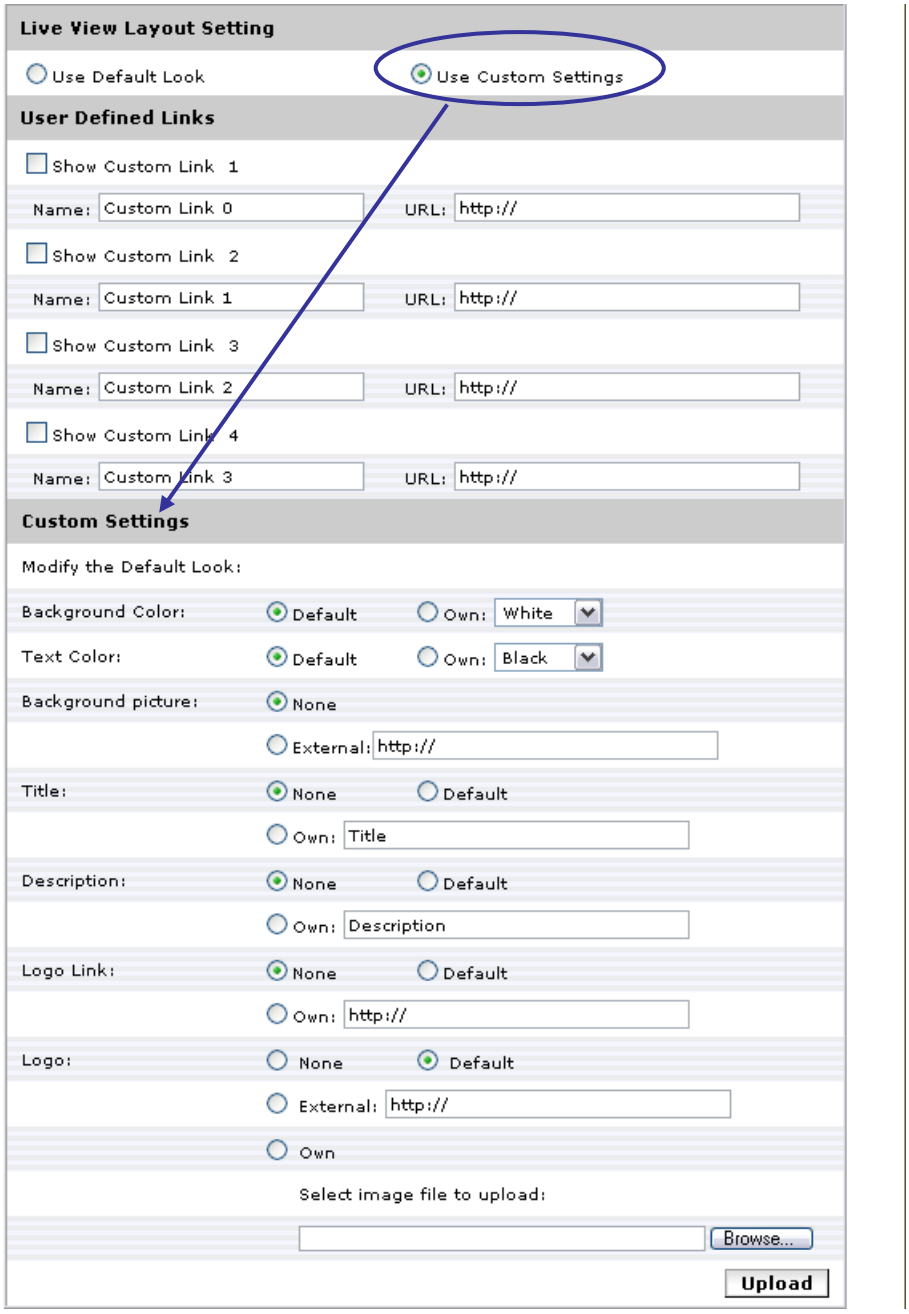
8. Customize

This page provides the function of adjusting the look of live view page. There are two types of layout settings; use default look or use custom settings.



Use Default Look: the default layout of live/configuration pages.
Use Defined Links: Web link(s) will be presented on the live page when enabled. It can be a link to another IP camera for instance, or other preferred web link.

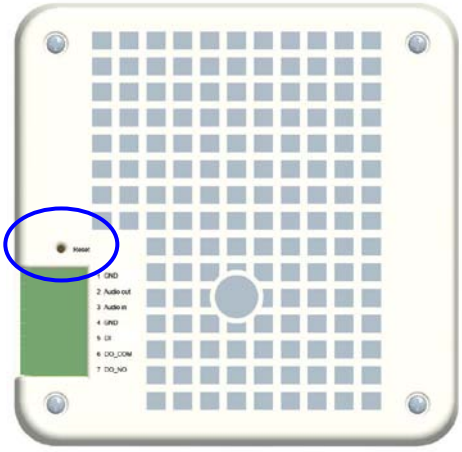
Use Custom Settings: The modifications allowed are change of Background / Text Color, Background picture, Title, Description, Logo and etc.



FAQ

Restore Factory Default

In some cases, system does not respond to any operation, this process gets the unit back to initial status, so that it can be reconfigurable for up and running again.



To restore factory default, please follow the steps:

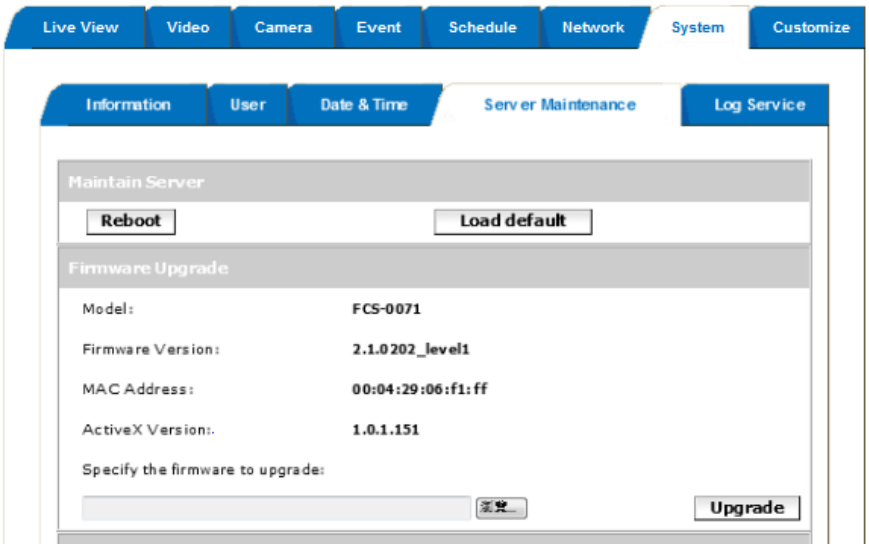
1. Unplug the power jack to turn off the camera
2. Insert a pin into the reset hole pressed the reset button and keep it pressed until instructed to release.
3. Plug in the power jack to turn on the camera. The power LED will start flashing in a short while.
4. Release the pin when the LED starts quick flashing. The device should be set back to factory default.

Upgrade Device Firmware

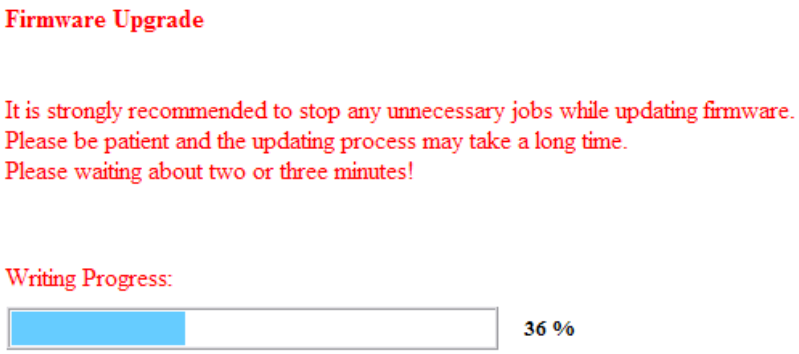
Firmware upgrade process should be done via the web configuration; Setup -> Server Maintenance -> Firmware Upgrade. Before the process, read the instructions and release notes coming with each new released version.

1. Check and retrieve the latest firmware bin file.
2. Disconnect all clients (e.g. streaming requests) to the device that will be firmware upgrading.
3. Stop the local (schedule) recording if it was enabled.
4. Go to the Firmware Upgrade page, browse and locate the downloaded firmware bin file,

then click on "Upgrade" button.



5. The upgrade should start in minutes, depending on file transferring status. The web will then be directed to the system writing progress. Overall upgrading process takes about 5~10 minutes. In this period, DO NOT DISCONECT the power. System of the unit can be damaged otherwise.


Firmware Upgrade
It is strongly recommended to stop any unnecessary jobs while updating firmware.
Please be patient and the updating process may take a long time.
Please waiting about two or three minutes!
Writing Progress:
36 %

6. The power LED (orange one) will be quick/slow flashing during the upgrading process. When it becomes again steady on, camera is ready to be accessed. Check the firmware version. If somehow system is not upgraded, redo above steps. In the case, restore factory default process may be required.

-------- End of Document ------